THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

Now that the iron trade has come to the point of normal manufacture and delivery of iron and steel products, the experience is so new that there is some disposition to accept it with misgivings. If inability to do business is a condition to be desired, there is ground for dissatisfaction with the change. In the past week reports have had currency indicating that some in the trade have run ahead of events and allow no intermediate ground between the feast and the famine condition. Easier deliveries prevail in most finished lines, as compared with the winter months and there is increasing freedom in coke shipments. In pig iron lower prices have been named for foundry grades. These are the facts on which a good deal of pessimistic rumor has been built. The associated Southern furnaces appear to be doing little business, but outside furnaces have named lower prices on the small tonnage that has been closed, and small though it is it makes the market. The association furnaces appear willing to let the smaller interests develop the situation and take such business as now offers, their expectation being that when the real buying comes the iron of the former will move at a price determined by conditions then existing. As low as $15.50 at furnace is reported on Southern No. 2 for delivery in the Chicago district. The purchase of 2,400 tons of No. 2 and No. 3 by a Western interest brought low prices from Northern furnaces, $19.50 and $19 respectively being named. Gray forge has sold at $14.65, Birmingham and it is reported that the United States Steel Corporation has been a buyer. Cast iron pipe producers have bought forge iron as well as Nos. 3 and 4 iron. A portion of a 3,000-ton order of No. 3 and No. 4 for Western shipment is reported taken by a Southern furnace at a flat price of $14.90 at furnace. Eastern pig iron markets are weaker, Pennsylvania iron being 50 cents to $1 lower than late April prices, while foreign irons have declined in view of a lower warrant market abroad and the lower prices of domestic irons in the United States. Middlesboro No. 3 is now quoted at $17.50 on dock at New York, but there has been no buying. Pittsburg is prolific in incorrect reports concerning pig iron and steel. The meeting of the pig iron committee of the steel corporation at Pittsburg Tuesday gave rise to reports that iron would be bought for May and June, and that the tonnage of Bessemer for the second half had been agreed upon between the corporation and the Valley furnacemen. No iron was bought and we are advised that no new negotiations are pending at this time. Other steel interests have bought some lots of prompt Bessemer, however. The steel market stands where it did one week ago. The Pittsburg interest reported in press dispatches to have cut the price of billets $1 to $2 denies that it has sold or offered any. It has absolutely no steel to sell; and this is the present condition of the steel corporation, which took a Youngstown mill off rails recently that it might meet a pressing demand for sheet bars from a subsidiary plant. The quotation of $30.50 to $31 at Pittsburg holds for domestic steel while $28.50 is possible on German billets at Atlantic port, though little foreign steel can be had in view of the revived home demand upon German mills. The Eastern Bar Iron Association is reported to be dissolved, owing to a disagreement over prices, which have been weaker under lessened Eastern demand. Western bar iron prices show some irregularity, and there are rumors, which manufacturers deny, that some agricultural machinery interests have bought steel bars on last year's contract basis of $1.50 Pittsburg. Some further sales of steel bars have been made in the week, buyers generally covering only to January. A 5,000 ton order for cast iron pipe has been taken by the leading interest, and Kansas City has bought 2,000 tons of plates for a riveted pipe line. Plate mills are making better deliveries and premiums are practically eliminated. Structural business is of fair proportions but interruptions of erecting work, due to strikes, as of the teamsters, are felt. While no sweeping strikes are on, there are many small ones, with possibilities of considerably curtailment of consumption in the aggregate.

PITTSBURG.

(Special Telegram.)

PITTSBURG, May 13.—The press dispatch of a $29 price by the Jones & Laughlin Steel Co. on steel billets is pronounced entirely without foundation. The company is not a seller of steel on long time contracts at any price, and just now has no steel to sell for any delivery. However, the $29 basis mentioned in the dispatch as bid on a year's supply of sheet bars, would not be a low price but a high price, as compared with $30.50 and $31, the prevailing basis for small lots.

The United States Steel Corporation has not taken any pig iron as the result of yesterday's meeting of its pig iron committee here. It is authoritatively stated that no offers are being considered, that no purchases have been made and that none are in prospect.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, May 12.

Not for nearly three years has there been so much pessimistic talk in the iron trade as in the past few days. But it is noticeable that the bearish talk increases as one runs the gamut from the largest and best informed interests down. The only basis seems to be that the eyes of the iron and steel trade are on pig iron, and no one is ready to buy pig iron. Sales the past week have been the lightest for many months. The tendency of the pig iron market to adjust itself on a lower level, in consonance with the ease in the coke situation, has frightened off buyers, who also emphasize the fact that an occasional new blast furnace is being blown in. For 30 years our production of pig iron has shown an average increase of 6.8 percent each year over the preceding, which, allowing nothing for the greater rate at which it increases in good times like the present, would be 100,000 tons monthly this

year, implying the blowing in of quite a number of large furnaces to provide for increased production and the replacement of old furnaces.

The disinclination of pig iron consumers to make purchases, and their desire to make received quotations the basis for the expectation of further reductions, has led most sellers to refuse to quote any but nominal figures, resulting in a practical deadlock which can be broken only by one side or the other yielding in an unmistakable manner.

The monthly meeting of the steel corporation's pig iron committee occurs today, and tenders of forge, basic and Bessemer for May and June shipment have been invited. It is understood the corporation can use some Bessemer at once at Bellaire and possibly elsewhere, and forge at both Pittsburg and Valley points. So far as can be ascertained no low bids have been submitted, furnaces being quite firm in their demands, as there is very little iron to spare for such delivery. Representatives of associated Southern furnaces have adhered to the official prices on forge, which would be $20.45 Youngstown, $19.45 Sharpsville and $19.85 Pittsburg. For Northern iron, $20.45 Pittsburg has been asked for forge and a shade over $20 Valley for Bessemer.

It is regarded as probable that this figuring will give the corporation a line on the market for the second half, and a large purchase for second half delivery may be made within the next few weeks. It will be remembered that the corporation came near purchasing 140,000 tons of second half iron some two or three months ago, and estimates of the possible purchase in the near future put the tonnage between 100,000 and 150,000 tons.

Furnace interests show very little signs of weakening in the face of an utter absence of demand, which is being made the most of by a coterie of middlemen who customarily embrace such an opportunity to buy. Quotations where made are about on the level of sales during the past few weeks, and furnaces regard their position as much stronger than that of consumers, being sold up quite fully for from three to four months in the North. Some low quotations made on a large inquiry for second half Bessemer, by a furnace not yet blown in, have been withdrawn, although the effect of such quotations having been made has not been entirely dissipated.

There remains considerable inquiry for crude steel, but almost entirely for early shipment. Prices, however, are quite firm, as there is no surplus of steel production, labor troubles having about nullified the influence of better freight movement in coke. Foreign steel is not an active factor in the market, foreign prices being firm and shipments impossible before July or August.

Finished steel products are all held firmly at base prices, with no indication of any breaks. Buying has been decidedly limited, as consumers are waiting for pig iron to settle, but specifications against contracts are entirely satisfactory, and keep mills well employed. In iron bars mills are in receipt of little new business, but they are well filled to July and are not making any effort to invite new business. Most independent sheet mills claim to be holding to about 2.90c for black sheets, and to be closing a little prompt business on this basis.

The resumption of ore shipments, and a heavy coal movement, accentuated by an absence of river shipments for several weeks, have produced a mild scarcity of empties, and furnace interests find the situation requires close watching to keep iron moving out freely. There is some danger that as the coal and ore movement continues more trouble may be experienced. Meanwhile coke is easy, with no contracting, and spot shipment commanding but very light premiums.

The project to put in operation an old mill in the Pittsburg district for the manufacture of sheet bars is still under consideration, but it has not been figured out yet how the operation can be carried on at a profit, as the conversion cost would be considerable, and there would be a dead loss in freight on steel from any producer to the bar mill in question.

Pig Iron.—There have been practically no sales in this market since last report, barring occasional resales of foundry pig by consuming interests at whatever concession was necessary to put through the business. Furnace interests are making no effort to force business, as they see that concessions would not avail. The expectation simply is that consumers will have to come into the market before furnaces have to sell, but if they do not, lower prices will have to result. The whole aspect of the market would be changed should the steel corporation purchase a round lot in the near future, and interests close to the corporation fully expect this will be done. For third quarter Bessemer furnaces are asking $19.50, but might do $19.40, at furnace, while for full second half $19.25 is quoted. It is probable $19 at furnace would be done on a good round tonnage, sufficient to change sentiment. Southern forge is $19.85, Pittsburg, for quick or extended delivery. On Southern foundry $21.35 is the nominal price, but this could be shaded 50 cents a ton and possibly more. The differential on Southern iron of a dollar a ton extra for Western points is technically not withdrawn, although it is a dead letter. The artificial character of the distinction is shown by the fact that the line of demarcation passed through the "Valleys," regarded for a generation as practically a unit. Unofficial statements of pig iron imports in April place the total at 82,350 tons, against the official figures of 59,628 tons in March and 45,187 tons in February. The figure, if correct, shows a curious anomaly, when the necessity of imports has been clearly decreasing since the first of the year, and would indicate further a decided influence on the domestic situation when these imports finally cease, as they must in the face of the poor buying in recent months. We quote Northern iron as follows for prompt and second half shipment:

Bessemer, Valley	$19 25 to 20 00
Bessemer, Pittsburg	20 10 to 20 85
No. 1 Foundry	21 75 to 22 50
No. 2 Foundry	21 00 to 21 75
Gray Forge, Pittsburg	20 00 to 20 40
Chilled Basic, Valley	19 35 to 20 00
Chilled Basic Pittsburg	20 20 to 20 85

Steel.—Transactions have been light in crude steel, as the demand is all for prompt shipment and very little is available. The market does not seem to be any weaker, but current transactions are so light as to be little index for the more distant future. Bessemer billets are about $31, delivered Pittsburg, or about $30.50 at mill, with open-hearth $31.50 to $32.50, Pittsburg, depending on carbons and quantity. Wire rods continue very firm at $37 to $38, Pittsburg, for Bessemer or open-hearth.

Ferro-Manganese.—There is nothing new in ferro, English being quoted at $50 in large lots up to $52.50 for small lots, delivered.

Muck Bar.—There is practically no buying of muck bar, and best local grades are quoted at $35.50, although this might be shaded 25 or 50 cents on a firm offer.

Skelp.—Iron skelp seems a shade easier, while steel skelp continues very scarce. We quote grooved a dollar a ton lower, at 2c to 2.05c, with sheared quite firm at 2.10c to 2.15c.

Rails and Track Material.—There is little new in the rail situation, the market being practically closed for the year. We quote: Standard sections, 50 pounds and over, in lots of 500 tons and over, $28; car lots and less than 500 tons, $30; less than car lots, $32; light rails, 8 pounds in carload lots, $39; less than carload lots, $40; 12 pounds, $38; 16 and 20 pounds, $36; 25 to 40 pounds, $36. Track materials: Spikes, 2.15c to 2.20c; track bolts, square heads, 2.05c; hexagon heads, 2.65c; fish plates, 1.60c on orders accompanying large rail contracts, otherwise 2c to 2.10c is asked.

Plates.—Specifications on contracts continue quite satisfactory, and mills are running full. Car shops and structural fabricators are so well filled with work that the plate situation cannot help remaining good. There is a little buying for new requirements, and occasionally premiums are charged for small lots and quick shipment. Official prices remain: Tank plates, ¼-inch thick and up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.75c; marine, ordinary firebox, A. B. M. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive

firebox, not less than 2.10c, and it ranges in price to 3c. Plate more than 100 inches, 5c extra 100 pounds. Plates 3-16 of an inch in thickness, $2 extra; gauges Nos. 7 and 8, $3 extra. These quotations are based on carload lots, with 5c extra a hundred pounds for less than carload lots. Terms, net cash, in 30 days.

Pipes and Tubes.—The volume of business in merchant pipe and tubes continues entirely satisfactory, and mills are all very busy. No very large contracts have been placed in the past few days. We quote official prices as follows, in carload lots to consumers, f. o. b. Pittsburg, plus freight according to Tube Rate Book to destination:

MERCHANT PIPE.

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Wrought Iron Pipe. Black. Percent.	Wrought Iron Pipe. Galv. Percent.
⅛, ¼ and ⅜ inch	68	58	65	55
½ inch	70	60	67	57
¾ to 6 inch	75	65	72	62
7 to 12 inch	69	59	66	56
Plugged and Reamed				
1 to 4 inch	73	63	70	60
Cut 3 to 6 feet				
⅛, ¼ and ⅜ inch	63	52	60	49
½ inch	65	54	62	51
¾ to 6 inch	71	60	68	57
7 to 12 inch	65	53	61	50
Cut 6 feet and longer				
⅛, ¼ and ⅜ inch	64	53	61	50
½ inch	66	55	63	52
¾ to 6 inch	72	61	69	58
7 to 12 inch	66	54	62	51
Extra Strong Plain End				
⅛ to 8 inch	67	57	63	53
Threads only	66	56	62	52
Threads and Couplings	65	55	61	51
Double Extra Strong Plain End				
½ to 8 inch	59	49	55	45
Threads only	58	48	54	44
Threads and Couplings	57	47	53	43

NOTE.—Orders for less than carload will be charged at 12½ percent advance. Extra and Double Extra Strong Cut Lengths, lower random discounts by 10 percent net for 6 feet and longer, and 15 percent net for 3 to 6 feet.

BOILER TUBES.

Steel.

	Percent.
1 to 1¼ inches	48
2¼ to 5 inches	62½
1¾ to 2¼ and 6 to 13 inches	52½

Iron.

	Percent.
1 to 1¼ inches	36½
2¼ to 5 inches	45½
1¾ to 2¼ and 6 to 13 inches	35½

CASING.

	S. and S. Percent.
2 to 3 inches	58
3½ to 4 inches	60
4½ to 12½ inches	63

Bars.—Some new business is being taken in steel bars, and specifications on contracts are getting larger. Iron bars are quiet, the principal consumers being well covered. Mills are sold up to July and are not pressing for business. It is probable 1.85c, Pittsburg, could be done on iron bars, although the official quotation remains 1.85c, Youngstown. The bi-monthly examination into sales and shipments in connection with the sliding wage scale was to have been held today, but will not occur until later in the week. The last adjustment was on the basis of an average between 1.70c and 1.80c, putting the puddling rate at $6.12½, and the pending examination is not at all likely to change the rate one way or the other. We quote: Bessemer steel bars, 1.60c; open-hearth, 1.70c; plow beams and cultivator beams, 1.60c, net; channels, angles, zees and tees, Bessemer under 3 inches, 1.70c; over 3 inches, 1.80c; bar iron, 1.85c, Youngstown, or 1.89¼c, Pittsburg, with freight added to point of delivery from Youngstown. Hoops and bands are quoted at 1.90c, full extras, in 250-ton lots and over, and 2c in less than 250-ton lots.

Structural Material.—The trade is moving along smoothly, with mills in receipt of specifications up to the limit of their daily output. We quote as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles from 3 to 16 inches, 1.60c; universal mill plates, 1.60c.

Sheets.—The leading interest seems to be filled up for three months, and independents also have a large tonnage ahead. Most of them claim to be getting around 2.90c for No. 28 on all new business, but of course are not booking a great deal. We quote carloads at 2.80c to 2.85c for black and 3.90c to 3.95c for galvanized. On contracts for 500-bundle lots and over we quote regular prices as follows: No. 28, 2.75c; No. 27, 2.65c; No. 26, 2.55c; Nos. 22 and 24, 2.45c; Nos. 18 and 20, 2.35c; Nos. 14 and 16, 2.25c; Nos. 10 and 12, 2.10c to 2.15c. Galvanized: No. 16, 2.60c; No. 18, 2.85c; No. 26, 3.35c; No. 27, 3.60c; No. 28, 3.85c; No. 29, 4.35c; No. 30, 4.50c.

Wire and Wire Nails.—Not much new business is being placed, but prices are being firmly held. We quote: Wire nails, carload lots, to jobbers, f. o. b. cars, Pittsburg, $2; plain wire, carload lots, $1.90; barb wire, carload lots, $2.30; staples, carload lots, $2.20. Galvanizing, 30 cents extra. Carload lots to retailers are held at 5 cents advance in all lines, and on less than carload lots a further advance of 10 cents is charged. Steel cut nails are quoted as follows: Carload lots, $2.15, and less than carload lots, $2.20, f. o. b. Pittsburg, plus freight to point of destination. Iron cut nails are $2.25 in carload lots and $2.30 in less than carload lots. Terms, 60 days, less 2 percent off in 10 days.

Merchant Steel.—Prices remain firm and there is a fair amount of business going. We quote: Turned cold rolled and ground shafting, 47 off in carload lots and 42 percent off in less than carload lots; tire steel, 2.15c to 2.25c; spring steel, 2.25c to 2.35c; toe calk, 2.30c to 2.40c. The following differentials maintain: Less than 2,000 pounds of a size and not less than 1,000 pounds, 10 cents advance; less than 1,000 pounds of a size, 30 cents advance. Tool steel is quoted 7 cents and upwards, according to the grade.

Spelter.—The market is firm, with prices a shade lower, and we quote prime Western brands at 5.63½c for spot and 5.53½c for June.

Old Material.—The market is pervaded by a decidedly easier tone, with very little being done. Dealers seem hardly ready to buy except to make up on contracts, and it is hardly time yet for any big business. Following prices are nominal, and could probably be shaded in some cases: Heavy melting stock, $21.50 to $21.75; low phosphorus melting stock, $25 to $25.50; steel rails, $21 to $21.25; rerolling rails, $22.50 to $23; No. 1 cast scrap, $19 to $19.25; borings, $11 to $11.50; busheling scrap, $17 to $18; old iron rails, $24.50 to $25; turnings, $14.50 to $15. Relaying rails are getting in more active demand as the summer approaches, and new rails become harder to obtain. We quote small lots for immediate shipment at $31 to $33.

Coke.—Foundry coke for spot shipment is $5 asked, but some selling of small lots has been done as low as $4.50. Furnace coke is quoted $4 for spot shipment, while nearby deliveries can be had at $3.65, and on six-month contracts $3.50 might possibly be shaded. The movement is entirely satisfactory, but there are signs of trouble ahead, and consumers are watching the movement very closely. The lower Connellsville region again broke its record in the week ended May 2, producing about 52,500 tons, but the upper Connellsville region fell back to 249,000 tons, making a total of 301,500 tons, a decline of nearly 1,000 tons for the two regions from the previous week.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
519 MONADNOCK BLOCK, May 12.

The general aspects of the iron and steel situation are without change, though for the lighter forms of finished material and for pig iron there is a better demand. The Pullman order for 2,400 tons of Nos. 2 and 3 foundry, which was placed last week with a Northern furnace at $2 per ton below the regular schedule, together with the cutting that is being done by Southern furnaces, has resulted in a chaotic market with practically no basis of values. All sorts of quotations are ruling, the tendency being downward, and competition is keen for the business offered. Though official prices are still maintained by the leading producers, Southern iron can be bought in this city on the basis of $15.50 Birmingham for No. 2 foundry. In finished lines, plates, rails, merchant pipe and sheets are the most active. Bar iron is weak, new business and specifications having fallen off in the last two weeks. Consumers generally are placing short time contracts, and

a good sized order would be accepted by local mills on the basis of 1.75c Chicago. There is a steady buying of steel, but not in large quantities, and unconfirmed reports are current of the renewal of contracts on the basis of last year's contract quotation, 1.50c, Pittsburg. It is known that large consumers have tried to do this, but mills have refused. German billets are scarce, the foreign market being practically closed to American importers, owing to the increased demand abroad. Demand for wire products has fallen off; and new business in structural steel is limited to small lots from store. Scrap grows weaker, and further reductions in prices are anticipated. Coke is easy and can be purchased at $3.75 to $4 at the ovens. A contract for 5,000 tons of 6-inch to 30-inch cast iron pipe was let to the leading producer last week by the city of Minneapolis. Kansas City, which was in the market for 18,000 feet of cast iron pipe, has decided to use steel, and has let a contract for about 2,000 tons of plates which will be riveted on the ground.

Pig Iron.—No transaction this year has created such interest in this market as the Pullman order, which was placed with a Northern furnace last week, and none has had the same effect on prices. The order called for 1,200 tons of No. 2 foundry, which was closed at $19.50 Chicago, and 1,200 tons of No. 3, at $19, deliveries extending through June, July, August and September, 300 tons of each grade per month. This order has been pending several weeks and there was sharp competition among the furnaces to secure it. The low price at which it was accepted, being $2 per ton below the schedule, has had a weakening effect on the market, and sellers are already receiving offers on the same basis. Other Northern stacks, however, are refusing to quote below established figures, having their capacity taken for two to three months ahead. The result is a disordered market and a further postponement of the buying movement. There is considerable business being offered in the shape of carload lots, and Southern stacks are competing keenly for it. Those outside the association are booking the bulk of the tonnage, owing to the low prices which they are quoting and the fact that many of them have surplus stocks of certain grades which they are anxious to be rid of. No. 2 foundry, it is reported, has been sold during the week as low as $15.50 at Southern furnace while $16 has been made on several lots. A number of local consumers are in the market for large lots, a pipe concern for 3,000 tons of Nos. 3 and 4; an engine builder for 800 tons of Nos. 1 and 3; and other inquiries for 1,000 tons down to 100 tons. A part of the first mentioned order has been given to an independent furnace, which took 800 tons of both grades at a flat rate of $14.90 at furnace, deliveries to commence next month. The volume of inquiries has largely increased in the past week, but many of them are from concerns that do not contemplate buying immediately but wish to keep in touch with the latest phase of the situation. We have not revised our quotations, but the following prices may possibly be shaded by some furnaces, according to the size of order and delivery required.

Lake Superior charcoal	$24 00 to 25 00
Local Coke Foundry No. 1	22 00 to 22 50
Local Coke Foundry No. 2	21 50 to 22 00
Local Coke Foundry No. 3	21 00 to 21 50
Local Scotch Foundry No. 1	22 00 to 22 50
Southern Coke No. 1	21 35 to 22 35
Southern Coke No. 2	20 85 to 21 85
Southern Coke No. 3	20 35 to 21 35
Southern Coke No. 4	19 85 to 20 85
Southern No. 1 soft	21 35 to 22 35
Southern No. 2 soft	20 85 to 21 85
Southern Gray Forge	19 85 to 20 35
Southern Silveries (4% to 5% silicon)	22 85 to 23 85
Southern Silveries (5% to 6% silicon)	23 35 to 24 35
Jackson Co. Silveries (6% to 8% silicon)	29 30 to 30 30
Ohio Strong Softeners	24 00 to 24 50
Alabama and Georgia Car Wheel	28 35 to 29 35
Malleable Bessemer	21 50 to 22 00
Standard Bessemer	21 50 to 22 00
Basic iron	22 35 to 22 85

Bars.—While there is a fairly good demand for steel bars, manufacturers are not taking the tonnage they did a year ago, and contracts from all sources are generally for smaller lots and shorter deliveries. Reports are current that steel producers are offering to renew contracts on the same basis as in 1902, at 1.50c, Pittsburg, but these are denied. Bar iron continues weak, specifications falling off and new business being light. Some mills have so small a tonnage on their books and are finding it so difficult to get specifications, that a fair sized order could easily be placed at 1.75c. We quote mill shipments, Chicago delivery, as follows: Bessemer steel, 1.76½c; angles, less than 3x3, 1.86½c base; hoops, in lots of 250 tons and greater, 2.06½c; less than this amount, 2.16½c; iron, 1.80c to 1.85c. On lots from store, prices are as follows: Steel, 2c to 2.10c; iron 2.15c to 2.20c; hoops, 2.40c to 2.50c; angles, 2.25c rates.

Sheets.—Demand for both black and galvanized sheets has increased, though the preponderance of orders is for the lighter gauges. Independent mills are still unable to give prompt deliveries, the difficulty in getting sheet bars seriously handicapping them in this respect. We quote mill shipments, carload lots, Chicago delivery, as follows: Black sheets, No. 27, 2.86½c to 2.91½c; No. 28, 2.96½c to 3.01½c. Galvanized 75 and 5 percent. On lots from store, we quote, No. 27 black, 2.95c to 3c; No. 28, 3.05c to 3.10c. Galvanized 75 and 2½ percent to 75 percent discount.

Structural Steel.—Demand has been very light, the only business booked being the usual run of small lots which are invariably taken from warehouse stocks. We quote mill prices, Chicago delivery: Beams and channels, 16 inches and under, 1.75c to 2c; 18 inches and over, 1.85c to 2.10c; universal plates, 1.75c to 2.10c, according to delivery; angles, 3x3 and larger, 1.75c to 2c; tees, 3x3 and larger, 1.80c to 1.90c; zees, 1.75c to 1.95c. The maximum quotations are asked by some mills and dealers on lots for quick shipment. Store trade is quoted at 2¼c to 2½c per pound.

Plates.—A good sized tonnage has been booked by the local producer during the week, though it is all for late delivery. Store trade is active. We quote mill prices, Chicago delivery: Tank steel, ¼-inch and heavier, 1.90c to 2c; flange steel, 2c to 2.10c. The official price of 1.75c remains unchanged in this market, but applies only on late deliveries. For quick shipment mills are asking the advanced prices. Prices for lots from stock: Tank steel, ¼-inch and heavier, 2.15c to 2.25c; 3-16, 2.25c to 2.35c; No. 8, 2.30c to 2.40c; No. 10, 2.35c to 2.45c; flange steel, 2.40c to 2.50c.

Rails and Track Supplies.—Contracts for several thousand tons of heavy sections have been let, including 500 tons of "seconds," together with a large tonnage of light rails. Track supplies are in active demand, and mills are rapidly filling up for the year. We quote heavy sections, 500 tons and over, $28; less than 500 tons to carload lots, $30; less than carload lots, $32; second quality, $27; light rails, 45 pounds, $34 to $35; 12 pounds, $39 to $40, with regular differentials for intermediate sizes. Track supplies, mill shipments: Angle bars, 2c to 2.10c; spikes, first quality, 2.25c (out of store carload lots, 2.35c to 2.45c rates); second quality, 2.10c; track bolts, 3½x¾, with square nuts, 2.85c to 3c per 100 pounds; with hexagon nuts, 3.05c to 3.15c, with usual differentials for other sizes.

Merchant Steel.—A light tonnage has been placed during the week by implement manufacturers for requirements during the coming year, though specifications on old contracts are active. We quote mill shipments, Chicago delivery, as follows: Spring steel, 2.65c to 2.75c; sleigh shoe, 1.95c flat sizes; concave and convex, 2c; out of store, 2.15c; cutter shoe, 2.50c to 2.60c; machinery steel, 2.15c to 2.25c base; plow steel, 2.50c and upwards, according to quality; toe calk, 2.30c to 2.40c; out of stock, 3c to 3.10c; ordinary tool steel, 6c to 7c; specials, 13c and upwards; less than carload lots, 5 to 10 percent higher; cold rolled shafting, carload lots, 47 percent off; less than carload lots, 42 percent off.

Merchant Pipe.—There is a good demand for the lighter sizes of pipe, but on heavy sizes buying has fallen off owing to the crowded condition of mills. Kansas City has placed an order for about 18,000 feet of riveted steel pipe, having decided on this instead of cast iron pipe, as first contemplated. We quote carload lots mill shipments random lengths, f. o. b. Chicago, as follows:

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed Wrought Iron Pipe. Black. Percent.	Guaranteed Wrought Iron Pipe. Galv. Percent.
⅛ to ⅜ in. inclusive	66.35	56.35	63.35	53.35
½ inch	68.35	58.35	65.35	55.35
¾ to 6 inches	73.35	63.35	71.85	61.85
7 to 12 inches, inclusive	67.35	57.35	64.35	54.35

Less than carload lots, 12½ percent advance over above prices.

Boiler Tubes.—Prices remain firm, demand being active from mills and warehouse stocks. Our quotations below are on carload lots, mill shipments, f. o. b. Chicago. On less than carload lots from mill, 12½ percent is to be added:

	L. W. Steel Percent.	C. C. Iron Percent.
1 to 1½ in.	43.35	38.35
1¾ to 2½ in.	55.85	35.85
2¾ to 5 in.	60.85	45.85
6 to 13 in.	55.85	35.85

For lots direct from warehouse stock:

	L. W. Steel Percent.	C. C. Iron Percent.
1 to 1½ in.	40	35
1¾ to 2½ in.	50	32½
2¾ to 5 in.	57½	42½
6 to 13 in.	50	32½

Cast Iron Pipe.—A contract was let last week by Minneapolis for 5,000 tons of 6-inch to 30-inch pipe, delivery to be this summer. This is the only order of importance placed recently. We quote f. o. b. Chicago, carload lots, 4-inch water pipe, $34; 6-inch, $33; 8-inch and upwards, $32; gas pipe $1 a ton higher. On large orders these prices can be shaded.

Billets and Wire Rods.—Little business has been transacted during the week in billets, a few sales of open-hearth forging billets only being reported. The crowded condition of German mills with domestic orders has practically closed that market to American importers except for deliveries in the last quarter of the year and consumers will have to depend on the home market for their requirements. We quote German basic Bessemer billets, seaboard, $29.50 to $30; domestic Bessemer billets, $31.50; open-hearth billets for forging purposes, $36 to $40; wire rods, $40.

Wire and Wire Nails.—New business has not been of such large proportions as formerly, manufacturers having entered upon their dull season. Dealers, however, in all parts of the country, report low stocks, and these are taking advantage of the opportunity to replenish same. Specifications are voluminous and full tonnages are being taken. We quote prices to jobbers, Chicago delivery, as follows: Wire nails, carload lots, $2.20; less than carload lots, $2.30. Cut nails, steel, carload lots, $2.26½; less than carload lots, $2.36½. Plain wire, $2.10 carloads, and $2.20 in smaller lots; galvanized, carloads, $2.40; smaller lots, $2.50. Barbed wire, carloads, $2.50; less than carloads, $2.60; galvanized, carloads, $2.80; less than carloads, $2.90. Staples, carloads, $2.30; smaller lots, $2.40; galvanized, carloads, $2.60; smaller lots, $2.70. Bale ties, 85 percent discount f. o. b. Waukegan on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet or DeKalb, with actual freight allowed not exceeding 50 cents per 100 pounds.

Coke.—There is a plentiful supply but little demand. In sympathy with the pig iron market, consumers are buying coke only as their immediate wants necessitate. Connellsville 72-hour coke is quoted $4 at the ovens; Southern coke, $3.75; $6.75 to $6.50 Chicago respectively.

Old Material.—The market remains weak, demand being very small. Mills have large stocks on hand, and dealers are flooding the city with increased offerings. We quote gross tons as follows:

Old iron rails	$23 00 to 23 50
Old steel rails (mixed lengths)	17 00 to 17 50
Old steel rails (long lengths)	21 50 to 22 00
Relaying rails	31 50 to 32 00
Old wheels	22 50 to 23 00
Heavy melting steel	17 00 to 17 50
Mixed country steel	14 50 to 15 00

The following are selling prices per net ton:

No. 1 R. R. wrought	19 00 to 19 50
No. 2 R. R. wrought	17 50 to 18 00
Shafting	18 50 to 19 00
Dealers' forge No. 1	16 00 to 16 50
No. 1 busheling and wrought pipe	13 50 to 14 00
No. 1 cast	16 00 to 17 00
Railway malleable	15 50 to 16 00
Country malleable	14 50 to 15 00
Iron axles	23 00 to 23 50
Steel axles	19 50 to 20 00
Cast borings	8 50 to 9 00
Mixed borings, etc.	8 50 to 9 00
Wrought turnings	12 00 to 12 50
Machine shop turnings	12 00 to 12 50
Iron axle turnings	13 50 to 14 00
Steel axle turnings	13 00 to 13 50
Stove plate and light cast scrap	12 00 to 12 50
Old iron splice bars	20 50 to 21 00

Hubbert & Hubbert, iron and steel commission merchants, who were formerly located at 936 Monadnock Block, have taken an office at 621 Roanoke Building, 145 LaSalle street. They will continue to represent the various interests which have been in their charge for so many years.

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, May 13.

Although the continued dullness in the pig iron market, with a tendency toward lower prices, has had its effect upon nearly all branches of the market, including scrap, there are some encouraging indications, one of which is the steady demand for finished material, while another is the unexpected activity in figuring on new vessels. With rates which vessel men claim leave a very small margin for profit and with unusual demands by labor unions, it was feared that few new contracts for vessels would be made this year, but, in addition to the contract mentioned last week for the largest steel freighter ever built on the lakes, it is understood that contracts for two more vessels have been quietly placed and the material ordered and that President J. J. Hill, of the Great Northern road, is figuring on having several ships built in lake shipyards for service in the lumber business on the Pacific Coast. If these vessels are built, they will be taken through the Welland Canal and St. Lawrence to the Atlantic, and then around the Horn to Puget Sound. The mere fact that estimates of the cost of this construction are being made suggests the great possibilities of shipbuilding on the lakes, especially after the completion of the Panama Canal.

Iron Ore.—One Cleveland firm reports that it has sold practically all of its non-Bessemer ore and all sellers are finding it less difficult to dispose of the non-Bessemers; but the firm referred to has been more fortunate than the others, and all report that Bessemer ores are selling very slowly. Ore is moving more freely from the mines and vessels have been arriving in such numbers at Lake Erie ports that railroads have had more than they could do to meet demands, and there is already much complaint about poor dispatch. Rates are unchanged at 85 cents from ports at the head of Lake Superior, 75 cents from Marquette and 65 cents from Escanaba. The Pittsburg Steamship Co. is taking some wild tonnage.

Pig Iron.—The policy of the Southern association as announced by a visitor to Cleveland from the South this week is to adhere to the announced prices, not expecting to make sales, but counting on the independent furnaces taking orders until their capacity for the second half is pretty nearly provided for. Then the associated furnaces will come into the market and sell at such prices as may be necessary. It is expected that those prices will not be lower than the present quotations of independent furnaces. Signs are not lacking that Southern interests are preparing to make a more vigorous campaign than in recent years to sell their product in the Central West. Southern iron is now quoted at $15.75 to $16, Birmingham, for No. 2, but few sales even at that price are made and sales of Northern iron are at a standstill. While few cancellations of contracts are known to have been made, some foundrymen who have contracts at low prices, on which delivery has been delayed on account of the coke shortage of last year, have recently requested that shipments be delayed. We quote as follows, f. o. b. Cleveland:

Bessemer	$21 00 to 21 50
No. 1 Strong Foundry	21 75 to 22 00
No. 2 Strong Foundry	21 00 to 21 50
No. 3 Foundry	20 25 to 20 75
Scotch No. 1	22 00 to 22 25

Scotch No. 2	21 25 to 21 75
Gray Forge, Valley	19 00 to 19 25
Lake Superior charcoal	24 00 to 25 00

Finished Material.—Jobbers report very satisfactory business out of store. They say that, while large orders are seldom placed, they are gratified by the steady flow of orders of moderate size. While the buying is largely of the hand to mouth kind, it shows that the consumers are still enjoying prosperity. Mill sales are somewhat like those out of store. Some of the smaller agricultural interests have made contracts for steel at the prices 1.60c for Bessemer and 1.70 for open-hearth, Pittsburg, but the largest concerns are still hesitating. Bar iron is weaker, and, although some producers are still quoting 1.85c Youngstown, without making special effort to sell, 1.75c Youngstown is more nearly a correct quotation and sales have been made as low as 1.70c. Structural material is in good demand and delivery is being promptly given. Agreement quotations are as follows: Beams and channels, 3 to 15 inches, 1.75c; 18 to 24 inches, 1.80c; tees, 1.75c; zees, 1.70c; angles from 3 to 6 inches, 1.70c; universal plates, 1.70c. The condition of the sheet business is much more satisfactory, although the volume of business is not large. Consumers are specifying heavily on contracts made some time ago with independent manufacturers at low prices. While cutting on prices of the principal producers is not now in evidence, jobbers anticipate that competition will, at a not far distant date, be as lively as ever. The announced prices of the principal producer for sales through jobbers are as follows: Galvanized sheets, mill sales, carload lots, Nos. 10 and 11, 2.60c; Nos. 12-14, 2.70c; Nos. 18 to 21, 3c; Nos. 22 to 24, 3.20c; Nos. 25 and 26, 3.55c; No. 27, 3.80c; No. 28, 4.05c; No. 29, 4.45c; No. 30, 4.95. Galvanized sheets out of stock are quoted 75 and 5 off. For 3-16-inch black sheets and heavier we quote 2.15c, Cleveland. Mill sales of black sheets to consumers are made on the following basis: No. 24, 2.65c to 2.75c; No. 26, 2.75c to 2.85c; No. 27, 2.85c to 2.95c. The following are prices out of stock: No. 10, 2.35c to 2.50c; No. 12, 2.45c to 2.60; No. 14, 2.50c to 2.60c; No. 16, 2.60c to 2.70c; Nos. 18-20, 2.75c to 2.85c; Nos. 22-24, 2.85c to 2.95c; Nos. 25-26, 2.95c to 3.05c; No. 27, 3.05c to 3.15c; No. 28, 3.15c to 3.25c.

Old Material.—The effect of the depression in foundry iron is now shown in a very pronounced degree. This is particularly true of machine cast scrap, for which there is no demand, but transactions in all kinds of old material are limited to very small quantities. Even heavy steel, which had been firm for many weeks, is selling at 50 cents per ton less than last week. On account of the extreme quiet, many of the quotations given below are nominal. We quote f. o. b. Cleveland, gross tons:

Old iron rails	$25 00 to 26 00
Old steel rail (over 6 feet)	22 00 to 23 00
Old steel rails (6 feet and under)	20 50 to 21 00
Old car wheels	24 50 to 25 00
No. 1 R. R. wrought scrap	22 00 to 22 50
Mill scrap	19 00 to 19 50
No. 1 machine cast scrap	18 50 to 19 00
Iron axles	29 00 to 30 00
Steel axles	28 00 to 29 00
Axle turnings	17 00 to 18 00
Wrought turnings (free from cast)	16 00 to 17 00
Cast borings	10 00 to 10 50
Uncut wrought iron boilers	11 00 to 12 00
Steel boiler plates	18 00 to 19 00
Grate bars	13 00 to 14 00
Pipes and flues (clean)	17 50 to 18 50
Tank iron	17 00 to 18 00
Hoop and band iron	13 50 to 14 50
Sheet iron	12 00 to 13 00
Wrought drillings	15 50 to 16 50
Malleable iron (railroad)	19 00 to 20 00
Malleable iron (agricultural)	16 50 to 17 00
Stove plate	14 00 to 15 00
Heavy steel	20 50 to 21 00

CINCINNATI.

May 12.

Prices for coke are irregular and the market is easy and difficult to quote. A round lot of furnace coke is reported at $3 f. o. b. ovens. Foundry coke is quoted all the way from $4 to $4.75 f. o. b. ovens but it is stated that no reasonable offers are turned down and it seems the ovens are anxious to work off the accumulations which were piled up during the car shortage.

Pig Iron.—Trade continues small and sales mainly of small lots for quick shipment. Prices are irregular and very ragged. The bulk of the car lot and up to 100-ton orders of No. 2 foundry are at $16 to 16.50 Birmingham, but the $16 price has been shaded and $15.75 Birmingham is being done occasionally. It is a difficult market to quote. The low grade irons are in as easy condition as the top grades. We hear of sales of 500 tons No. 4 foundry at less than $14.75 Birmingham and 1,000 tons gray forge at $14.65 Birmingham, although the latter sale did not cover delivery in this territory. No. 3 foundry has sold lower than $15 Birmingham. These prices are perhaps "low water" marks but they serve to illustrate the situation. There is no general disposition to offer iron at less than $16 Birmingham for No. 2 foundry and a $16.50 basis is frequently quoted but there are a few furnaces anxious enough for business to make concessions to effect sales even on small lots. Buyers are still in a waiting mood and every little cut in the price makes them more determined to hold off. Sales agents are not urging their furnaces to accept less than $16 Birmingham basis. The association furnaces are still maintaining their schedule and piling iron. Some of the best informed men in the trade are confident that the trade is near the end of declining prices, but the situation appears very much in buyers' favor now. We again revise quotations f. o. b. Cincinnati, but inside prices are hardly criterion and only cover occasional sales. Yet there is so little business being done that all transactions must now be recognized in presenting market quotations:

Southern Foundry No. 1	$19 50 to 20 00
Southern Foundry No. 2	19 00 to 19 50
Southern Foundry No. 3	18 00 to 18 75
Southern Foundry No. 4	17 50 to 17 75
Southern Foundry No. 1, soft	19 50 to 20 00
Southern Foundry No. 2, soft	19 00 to 19 50
Gray forge	17 25 to 17 50
Northern Foundry No. 1	22 15 to 22 65
Northern Foundry No. 2	21 65 to 22 15
Southern car wheel iron	26 75 to 27 75

Finished Material.—The market holds steady and there is a fairly good trade, but mostly in a jobbing way. The easy condition of the pig iron market causes buyers to work closely and as deliveries are now easily obtainable manufacturers are carrying lighter stocks. Prices are not quotably changed although some shading is done on attractive orders. Galvanized sheets are being quoted at 75 and 5 percent off. We quote black sheets No. 27 at 2.78c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 3.10c; No. 27, 3.20c; No. 16, 2.65c; No. 14, 2.55c; No. 12, 2.45c; No. 10, 2.35c. Tank plates are firm and sell out of store at 2.15c for ¼-inch and 2.25c for 3-16-inch. Beams and channels are quoted at 2.15c to 2.25c from stock, and angles at 2.15c to 2.25c for base sizes. In merchant pipe there is no change in the situation. There is a fairly good steady trade and no change in prices. We quote:

MERCHANT PIPE.
(Basing Discounts.)

	Steel Pipe. Black. Percent.	Steel Pipe. Galv. Percent.	Guaranteed Wrought Iron Pipe. Black. Percent.	Guaranteed Wrought Iron Pipe. Galv. Percent.
⅛, ¼, ⅜ inch	66.7	56.7	63.7	53.7
½ inch	68.7	58.7	65.7	55.7
¾ to 6 inch, inclusive	73.7	63.7	70.7	60.7
7 to 12 inch, inclusive	67.7	57.7	64.7	54.7

BOILER TUBES.

	Steel Percent.	Iron Percent.
1 to 1½ inch	41.2	35.2
1¾ to 2½ inch	54.2	34.2
2¾ to 5 inch	59.7	44.2
6 to 13 inch	54.2	34.2

Old Material.—An easy tone prevails and the market is quiet and unchanged, with prices largely nominal. We quote:

Old No. 1 railroad wrought, net tons	$19 00 to 19 50
Cast machine and foundry, net tons	17 00 to 17 50
Old iron rails, gross tons	22 50 to 23 00
Old steel rails, gross tons	21 50 to 22 00
Old short lengths, gross tons	17 50 to 18 00
Old iron axles, net tons	27 00 to 27 50
Old chilled car wheels, gross tons	22 00 to 22 50
Stove plate, net tons	11 50 to 12 00
Wrought turnings, net tons	15 50 to 15 75
Cast borings, net tons	12 00 to 12 50

PHILADELPHIA.

May 12.

The tendency of pig iron prices is downward, and while the decline may not be rapid, there is a general feeling

that the lowest quotations have not yet been named. While stocks of foundry iron are not large, imports continue and production in this country is increasing. Hence the unwillingness of consumers to make contracts is not surprising. Sellers are somewhat dubious about the policy to be pursued.

Pig Iron.—Furnaces are making delivery on old contracts rapidly and the fact that there is still undelivered a considerable amount of iron sold at comparatively high prices has doubtless prevented sellers from making lower quotations, for fear of contracts being canceled. New business has dwindled until it is difficult to say what might be done on large orders. Labor agitation is still having a depressing effect. Present quotations are nominally as follows: No. 1 X foundry, $22.50 to $23; No. 2 X foundrv. $21 to $21.50; No. 2 plain, $20.50 to $20.75; gray forge, $19 to $20; Middlesboro No. 3, $20 to $20.50; Scotch, $21.50 to $22.50; basic, $19.75 to $20.25; Middleboro in cargo lots, $17.50 to $18.

Steel.—Prices are somewhat lower. Immediate supply is limited, but forward deliveries can be had at $28.50 on dock for German. Domestic is selling at $31 to $32 delivered in consumer's yard.

Finished Material.—Prices are somewhat weak. The Eastern Bar Iron Association has had several meetings recently with unsatisfactory results and there are indications that it may be dissolved. Differences of opinion resulting from the falling off in demand for bar iron are said to be responsible for the present disturbed condition of the association. Plates are a shade easier, but official prices are maintained. The strike in the building trades affects structural material unfavorably. We quote as follows: Steel tank plates, 1.75c to 1.85c; angles, 1.75c to 2c; iron bars, 1.93½c for carload lots; steel bars, 1.75c to 1.85c.

Old Material.—Prices are showing weakness in sympathy with other lines. We quote: Old steel rails, $21.50 to $22; miscellaneous heavy steel scrap, $20.50 to $21; low phosphorus scrap, $28 to $29; old steel axles, $26 to $27; old iron axles, $29 to $30; old iron rails, $24.50 to $25.50; old car wheels, $23.50 to $24.50; choice scrap, R. R. No. 1 wrought, $23 to $24; country scrap, $20 to $21; machinery cast, $19 to $20; No. 2 light scrap (forge), $18.50 to $19; No. 2 light scrap (ordinary), $14 to $15; wrought turnings, $16 to $17; wrought turnings, choice heavy, $18 to $18.50; cast borings, $11.25 to $11.75; stove plate, $15.50 to $16.50.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, NO. 150 NASSAU ST. May 13.

Pig Iron.—Dullness characterized the pig iron market in this locality during the past week, owing to buyers holding aloof from it even more noticeably than in the week previous. Sales agents report very few sales and in every case it was for a small amount to meet a current requirement. Rumors of lower prices have been industriously circulated. Today word came from Philadelphia that all grades of pig iron have declined in that city on an average of $1 per ton during the past few days. Back of the dullness which prevails, there is a weak undertone, which consumers make considerable capital of. There is no activity displayed by buyers in providing for their wants for the second half, owing to their belief that the furnaces will make still further concessions. The latter still stoutly maintain that the present schedule of prices will remain. Southern interests are particularly insistent on this point. There are few of them who have not sold their output up to the early part of September. Producers are confident that buyers will soon give up their waiting policy. Foreign irons are out of the market. Cables show warrants to be fairly strong, though today there was a slight decline in Middlesboro No. 3, which makes the price on this market about $17.50 net. German brands are quiet, and there have been no sales. We quote New York prices for immediate delivery as follows: No. 1 X Northern, $21.50 to $21.75; No. 2 X Northern, $20.25 to $20.75; No. 2 plain Northern, $19.75 to $20.25; No. 1 Southern foundry, $21.50 to $21.75; No. 2 Southern foundry, $20.50 to $20.75; No. 3 Southern foundry, $19.50 to $19.75; No. 4 Southern foundry, $19 to $19.25.

Billets.—Prices for German billets have declined in sympathy with the weakness in pig iron. Basic Bessemer billets can now be had for about $28.75 in carload lots, duty paid. Some business is reported on a lower basis. Deliveries continue unsatisfactory, but there has been no falling off in inquiries.

Finished Iron and Steel.—Labor troubles have cast a damper over the market, all structural work here being practically tied up by the teamsters' strike. The employes of the Lassig plant of the American Bridge Co., numbering 700 men, are out. The company reports current business to be remarkably good, considering the adverse conditions which exist. Contracts closed during the week include 4,100 tons for the Pennsylvania Railroad, besides 800 tons for the new works the company is building at Altoona, Pa., and 2,000 tons for the addition of the General Electric Co.'s plant at Schenectady, N. Y. The event of the week is the dissolution of the Eastern bar iron association. No formal announcement to this effect has been made, but the withdrawals made leave no doubt of it. As a result prices are irregular, with a sagging tendency, in which a slackening demand plays some part. Sheets are not so active, leading jobbers reporting a notable absence of new business, which they attribute to the unsettled labor situation. Prices are a shade weaker. The snap to the plate trade is not in evidence as it has been. New York prices are as follows: Beams and channels, 15 inches and under, 1.75c to 1.90c; angles, 3 to 6 inches, 1.75c to 1.90c; zees, 1.75c to 1.90c; bulb angles, 2.05c to 2.35c; deck beams, 2.05c to 2.25c; sheared steel plates, tank, 2.10c to 2.15c; flange, 2.25c to 2.30c; fire box, 2.30c to 2.50c; refined iron bars, 1.95c to 2.10c; soft steel bars, 1.80c to 2c; steel sheets, in carloads, New York, No. 28 black, 2.95c to 3c; galvanized, 75 off.

BIRMINGHAM, ALA.

May 12.

The production of iron ore in April was slightly in excess of March, while stocks or iron decreased in the South. This was due to the movement of several thousand tons of mill and pipe iron. The largest consumer of pipe iron, it is reported, has purchased in the past 30 days between 5,000 and 10,000 tons of Southern iron, while independent pipe manufacturers have bought about 2,500 tons of iron suited for their needs. The steel corporation has recently purchased quite a lot of Southern forge. These different purchases were all for immediate shipment, and as a consequence Southern furnace yards are practically bare of forge and No. 4 foundry. Very little has been done in foundry iron. It is understood that Northern furnaces are making cuts which prevent Southern iron being sold in the Chicago territory at anything like the present schedule price of $17.50, Birmingham, for No. 2. However, with forge bringing $15 and upwards, it is argued that when a buying movement does begin, consumers will take the supply available at current prices.

The Tennessee Coal, Iron & Railroad Co. suffered a loss of about $10,000 by reason of the falling in yesterday of the top walls of its No. 2 furnace at Bessemer. The lining was known to be in rather bad shape, and it was the intention of the company to blow out the furnace for repairs as soon as No. 1 at Bessemer should be in operation again. An explosion resulted from the cave-in, wrecking the dust-catcher, downcomer and part of the cast house, as well as doing serious damage to the elevator and other machinery. No one was hurt.

The Southern Pipe & Foundry Co., organized some months since by the Messrs. Beggs, of this city, and Messrs. Dowd and King, of Charlotte, N. C., has begun operations at North Birmingham. Cast iron pipe will be the chief product.

It is said that the Alabama Tube & Iron Co. will soon complete its arrangements for renewing operations at its plant at Helena, Ala. It is understood some Northern capital has been interested, and that in addition to the manufacture of tubing, a line of horse shoes will be added.

The expiration of its contract for steel with the Tennessee Coal, Iron & Railroad Co. will, it is said, cause renewed energy

on the part of the Alabama Steel & Wire Co. in hurrying to completion the furnaces and steel plant at Gadsden. The company is operating the rod, wire and nail mills at Ensley from accumulated stock of material.

All the machine shops and foundries throughout the State continue to operate at full force and report a large business already booked for some months.

The Metal Market.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1909, NO. 150 NASSAU ST., May 12.

Pig Tin.—The market has declined sharply during the past week, chiefly because of heavy shipments on old orders—thus keeping buyers out—and adverse reports from London and Singapore. Trading has been of the most restricted kind. London has been very weak, prices showing a falling off of £1½ since our last report. Closing prices at the Metal Exchange today were as follows: Spot to June, 29½c to 29.70c. London closed today as follows: Spot, £134 5s; futures, £133 15s. Arrivals for the month to date amount to 2,067 tons, with 2,869 tons afloat.

Copper.—A dull and listless market prevailed during the past week, advices from all sides speaking of the demand being very slow. Prompt delivery of Lake and electrolytic is stiffening, and six weeks at the earliest is said to be the best that can be done. Large consumers have already contracted for all they will need up to that time. On the whole the metal's position is a shade stronger, and all prices are nominal. In London during the week the market has been strong, and prices are higher. Closing prices at the Metal Exchange today are as follows: Lake and electrolytic, 14½c to 14¾c; casting, 14½c to 14¾c. London closed today as follows: Spot, £63 5s; futures, £63 2s 6d. Exports for the month to date aggregate 2,347 tons, against 3,764 tons for the same period last year.

Pig Lead.—Is dull, at 4.37½c for lots of 50 tons or more. St. Louis is weaker at 4.17½c. London lower at £11 17s 6d.

Spelter.—Unchanged at 5.75c for spot. St. Louis is 5.50c, and London £21 10s.

Antimony.—Cookson's unchanged at 7¾c to 8c; Hallett's at 7c. Other brands are 6¾c.

Quicksilver.—Still quoted at $47.50 per flask of 76½ pounds in lots of 100 flasks. London unchanged at £8 2s 6d.

Nickel.—In good request at 40c to 47c for large lots down to a ton, and 50c to 60c for smaller quantities.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
519 MONADNOCK BLOCK, May 12.

Chicago jobbers report a quiet market, and all branches of the metal trade are featureless. Buying to a large extent has been influenced by the many strikes in this city and by the unfavorable outlook in the labor situation. Prices are without change, but weak. We quote lake copper, carload lots, Chicago delivery, 14¾c; smaller quantities, 15c. Pig tin, 31c; pig lead, 4.30c in 50 to 100-ton lots, and 4.32½c in lesser quantities; spelter, 5½c in carload lots, and 5¾c to 6c in lesser quantities; sheet zinc, 6¾c; antimony, 10¾c to 11c for Cookson's, and 9¾c for Hallett's. We quote old metals as follows: Copper wire, 12¼c; heavy copper, 12c; light copper, 11½c; heavy red brass, 12c; heavy yellow brass, 9c; light brass, 8c.

The Coshocton Machinery & Manufacturing Co., Coshocton, O., will begin this month, the erection of a new shop adjoining the present plant. It will be a frame structure 130x34 feet and a part of it will be two stories.

The declaration of principles set forth by the National Association of Manufacturers at its recent convention in New Orleans has struck a popular chord among the manufacturers. The month of April was one of the most successful in the history of the association in the number of new members added to the roll, representing all parts of the country. Many letters commending the platform adopted at the New Orleans convention were received by the officers.

NATIONAL ASSOCIATION OF STOVE MANUFACTURERS.

The thirty-second annual meeting of the National Association of Stove Manufacturers is being held in Cleveland this week with an attendance of 400 members and visitors. The National Foundrymen's Defense Association met Tuesday and discussed matters relating to labor. President Castle reviewed the work of the year, which, he said, had been very satisfactory. No strikes of any importance had taken place and over 200 minor labor troubles were adjusted by arbitration. He said that the relations between employer and employe are so cordial that a large strike is not feared.

The following officers were unanimously elected: President, C. H. Castle, Quincy, Ill.; vice president, Henry Cribben, Chicago; secretary, T. J. Hogan, Chicago; treasurer, Abram C. Noll, Philadelphia, Pa.; second district committee, Grange Lord, Albany, N. Y.; E. W. Peck, Rochester, N. Y.; R. G. Reynolds, Richmond, Va.; W. D. Snyder, Columbia, Pa.; H. T. Richardson, New York city; third district committee, Jeremiah Dwyer, Detroit, Mich; Lazard Kahn, Hamilton, O.; Joseph Dwyer, Detroit, Mich.; Stanhope Houl, Piqua, O.; S. R. Baldwin, Pittsburg, Pa. Fourth district committee, D. McAfee, Quincy, Ill.; N. H. Burt, Leavenworth, Kas.; H. A. Viets, Milwaukee, Wis.; F. Sattler, Bellville, Ill.; R. S. Buck, St. Louis, Mo.

Tuesday evening the visitors were entertained at a theater party and later were the guests of the Gobeille Pattern Co. at a smoker at the Cleveland Yacht Club.

Wednesday morning the convention of the National Association of Stove Manufacturers was called to order by President Albert N. Parlin, of Boston, who introduced Rev. Harris R. Cooley, a member of the Cleveland Board of Public Service, who, as the representative of Mayor Johnson, cordially welcomed the visitors to Cleveland, the mayor having been called to New York. Mr. Cooley earnestly commended the efforts of the association to bring about more cordial relations between capital and labor, and heartily indorsed the principle of arbitration. Consideration of the program as printed in these columns last week was then begun. The sessions will continue through Thursday evening.

Clairton Steel Company.

(Special Telegram.)

PITTSBURG, May 13.—W. P. Snyder, with a party of stockholders and officers of the Crucible Steel Co. of America, spent yesterday at Clairton, Pa. The report that the Clairton Steel Co. will shortly contract for much new erection is incorrect. It still has under consideration plans for a fourth blast furnace and two Bessemer converters, as announced some time ago. The company has one blast furnace in operation with its open-hearth steel plant and 40-inch two-high reversing blooming mill. It contracted some time ago for a three-high 28-inch billet mill, which is now under construction. It has also contracted for one stand of additional rolls for structural shapes. There is under contemplation another stand correlative to this, to roll sheet bars. The metal mixer is about half done and is expected to be completed in June.

Obituary.

James M. Bailey, Allegheny, a well-known iron manufacturer, died at his home May 6th after an illness of several weeks. Mr. Bailey was born in Pittsburg in 1833. Since 1873 he has been largely interested in the iron and steel business as a member of the old firm of Phillips, Nimick & Co., which later became Singer, Nimick & Co. He was also largely interested in railroad and other business incorporations.

The mystery of the disappearance of Chas. G. Dennison, member of the firm of C. Sidney Shepard & Co., tin plate and metal dealers of Buffalo, was cleared up May 9, when his body was taken from the Niagara River below the Horseshoe Falls. It is believed that Mr. Dennison committed suicide on account of his great grief over the deaths of his daughter and business partner.

McIntosh, Seymour & Co., Auburn, N. Y., have received a large contract for engines for shipment to Mexico.

SETTLEMENTS IN CHICAGO METAL TRADES.

CHICAGO, May 12.—No permanent agreement has yet been reached with the local unions of the International Association of Machinists by the Chicago Metal Trades Association, though, as the result of conferences held last week, the two bodies have agreed on the nine-hour day and a 5 percent advance over the wages paid Jan. 1 last. This advance will be given only to those men whose pay has not been increased since the first of the year. The committees could not arrive at any settlement of the questions of discrimination between union and non-union men, the restriction of output, and the number of apprentices to be employed. These will be referred to an arbitration committee, which will meet this week. The committee is to consist of two men from each side, the four to select the fifth man.

The demands made by the blacksmiths' helpers and the sheet metal workers have been adjusted with the exception of the wage question, which will also be referred to an arbitration committee. Both unions have been granted the straight nine-hour day.

At the meeting of the Cook County Founders' Association, held last Thursday afternoon at 906 Chamber of Commerce Building, the organization committee reported with a constitution and by-laws, which was nominally accepted. Several minor amendments were made, and the committee was instructed to have the Constitution printed and distributed among the various members before the date of the next meeting. At this meeting, which will be held Thursday, May 14, the constitution will be adopted, officers elected, and the temporary agreement which has been entered into with the Iron Molders' Union ratified.

Two hundred boilermakers employed by John Mohr & Sons, South Chicago, went on strike last week after their complaints had been adjusted by the business agent of the union. The men demanded a 20 percent increase in wages, and as it was not forthcoming as quickly as they desired, left the shop. The company had practically agreed to grant the demands, but as the president was about to sign the agreement, word was carried to him that the men had quit work, and all negotiations were immediately called off.

Strikes in Cleveland Machine Shops.

Demands have been made by union machinists in a number of Cleveland shops recently. At the National-Acme Mfg. Co.'s works 40 men went out after demanding a 9-hour day and 12½ percent increase in wages. In five days 17 of the men returned without concessions and the places of most of the others have been filled. At the American Machine Co.'s works 54 men struck for 9 hours a day and no decrease in pay. This would mean nine hours on each of five days and five hours on Saturday, when the shops are closed for a half holiday—in other words, 50 hours' work a week with 60 hours' pay. The management decided that the demand would not be granted and meantime the plant is shut down. At Lord, Bowler & Co.'s a similar demand was made by 13 men and at the Union Machine & Boiler Co.'s plant 11 men went out.

Labor Notes.

Machinists at the Bates machine shops and Humphrey's foundry, Joliet, Ill., are on a strike. The wages since the settlemen of the strike of eighteen months ago have been 29½ cents an hour for a ten-hour day. The men now want 32½ cents an hour and a nine-hour day.

The machinists employed at the plant of the Berlin Machine Works, Beloit, Wis., struck May 8 for the nine-hour day, an increase in wages and recognition of the union.

Forty-two of the forty-five employers of sheet metal workers, Minneapolis, have signed the union wage scale. The men will secure an eight-hour day and a minimum wage of 40 cents per hour.

The boiler manufacturers and iron shipbuilders of Boston and vicinity have refused the request of the union for an advance of 10 percent in wages.

The molders employed at James Brown's machine shop, Pawtucket, R. I., have been granted a nine-hour day at $3 per day and Saturday afternoons off. The other foundrymen have not granted the union demands.

Structural iron workers employed at the McKinney & Campbell Iron Works, Albany, N. Y., are on a strike for a shorter working day. The company offered the men an advance of 10 percent in wages if they would continue to work on a ten-hour basis. This the men refused to do.

Two hundred iron molders of Kansas City, Mo., are on a strike, and practically every foundry in the city is affected.

The Milwaukee molders, since May 1st, have received higher wages than had been paid in that city for several years. The floor men will receive an increase of from $2.85 to $3 a day, and the bench men from $2.65 to $2.80 a day.

The Assemblers' and Adjusters' Unions have complied with the request of the National Cash Register Co., Dayton, for the removal of the price limit, and other points of difference have been agreed upon so that a threatened strike has been avoided.

Foundry work in Newark, N. J., is almost at a standstill because of the strike of the molders' helpers for an increase from $1.50 to $1.75 a day. At Maher & Flockhardt's foundry 100 helpers went out and 25 left Alexander Traudt & Co.'s foundry.

The scale adopted at the annual convention of the Tin Plate Protective Association of America at its annual convention at Anderson, Ind., last week, will be submitted to the manufacturers next month. It is said to contain few changes.

The executive committee of the Furnace Workers' Union in session at Ironton, O., has decided to ask for an increase of 15 percent in the wages of the workers in the Columbus district, numbering about 2,000 about.

At Erie, Pa., 400 molders are striking for an advance of 15 cents a day, bringing the minimum to $2.80.

The iron molders at the Superior Iron Works, Superior, Wis., went out on strike to enforce the 9-hour day, but were ordered back by their National officers, permission to strike not having been granted. The question will be settled by conference or arbitration.

The Hanging Rock Region.

IRONTON, O., May 11.—It is now reported that the Ashland sheet mill, the suspension of which has caused a shutting down of some departments of the mills here and at Ashland, Ky., will make extensive repairs and resume about July 1.

A syndicate of Ironton capitalists have purchased the lands of Col. George N. Gray and adjacent property near Little Etna, and will develop the several thousand acres of mineral lands.

A. C. Parker, representing Cleveland, Pittsburg and Philadelphia parties, is negotiating for the purchase of 37,323 acres of coal land in Cabell, Logan and Wyoming counties, West Virginia, with a view of extensive coal and coking operations.

The Southern Columbia Lock Nut Co., organized at Birmingham, Ala., Monday, contemplates the erection of one of its plants at Huntington, W. Va. It will manufacture a lock nut patented by G. W. Wicks, of New York.

The work of dismantling the old Alma cement mill at Wellston, to make way for the mammoth steel structure to be erected by the Alma Cement Co., was begun last week.

With the exception of Hecla, all the furnaces remain in blast and the resumption of the former is expected daily. The Ashland strike still retards wire and wire nail operations.

Alfred G. Hathaway, of Cleveland, dealer in iron, steel and railway supplies, is very much pleased with the way business has opened up this spring. The bridge people are buying a great many structural rivets and bolts, and last week he shipped two carloads of rivets to Eastern shipbuilding concerns. The boiler people have been large buyers of rivets, and week before last he shipped three carloads to St. Louis and the Southwest. Rivets have not been cheaper than they are at the present time for the last four years, and Mr. Hathaway doubts whether the low prices will continue very many more weeks. He has just received an order for all the structural material for a large building in Cleveland.

THE IRON TRADE REVIEW

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MAY 14, 1903

SOME LABOR QUESTIONS.

The attitude of the International Association of Machinists toward piecework and the premium system is probably the most important matter before its convention in Milwaukee. The official organ of the union has advocated "regulation and control" as the better policy, and suggests that "if the organization acts wisely and conservatively it will adopt this policy with good grace. We must face the inevitable sooner or later." There is a clear intimation here of an official desire to modify the long-standing opposition of the machinists' union to piecework in any form, the constitution providing that any member who accepts piecework in a shop in which it had not existed becomes subject to expulsion. The fact appears to be that the union is finding quite as much difficulty with its own members as with manufacturers who want to establish some equitable correspondence between wages and work done. The progress made by the premium system among important machine shops has been due quite as much to the favor it has found with employes as to any other single factor. As has been said over and over again, the rate-fixing feature is the key to the equitable operation of the system. If the employer maintains his original agreement that the rate shall not be changed, he removes at once the prime cause of the ancient antipathy of the trade union to piecework. Indeed it is difficult to account for the hostility the machinists' union has maintained to any attempt to reward the workman according to work done, except on the ground that it is opposed to increased production. This position is becoming so unpopular and is so far against the interest of the skilled workman that labor leaders have made public disclaimers of any such policy. We have read the discussions on the piecework problem as reported in the proceedings of the conventions of the National Association of Machinists, and must conclude that the opposition to piecework is founded on the fear that ambitious workmen will "kill the job" by doing too much and setting too hard a pace for the average man or the incompetent man. The problem has its difficulties, but it is not to be solved on any basis that makes a different rule for the workman from that which obtains in the sale of product in the market. Amount and quality of work turned out decide the success of any manufacturing enterprise, and the buyer of its product insists on having so much and so good a product for the price he pays. Unions cannot abolish this sort of a standard for labor, unless they can overturn it in the general market.

In Vol. 1, No. 1, of the *Monthly Review* of the National Civic Federation Secretary Easley, the editor, essays to characterize some movements among employers as antagonistic to labor unions. In the open letter printed elsewhere in this issue, Commissioner DuBrul, of the National Metal Trades Association, takes exceptions to the statements in the *Monthly Review* editorial which refer to that organization. It would seem that the secretary of the Civic Federation has imitated some of the critics of his own organization in making generalizations without a sufficient basis of facts. It is no more true to say that employers or organizations of employers that oppose the outrages and excesses of some of the labor unions are antagonistic to organized labor, than it is to say that the National Civic Federation encourages the abuses and the unjust demands of the unions, because it has shown a friendly attitude toward labor leaders and has sought to bring employers and employes into conference relations. There is a widespread feeling among employers of labor that the Civic Federation movement, even though not so designed, has operated as a stimulus to demands by labor unions—demands often just, perhaps, but often, also, arbitrary and of a class which should be resisted to the utmost. The activities of the Federation have been productive of good in a sentimental way, no doubt, as they have emphasized the value of the get-together policy in the relations of labor and capital; but in practice there has not been enough pains to discriminate between the things that may be compromised or arbitrated and those which may not properly be so treated. There can be no arbitration of a citizen's constitutional rights, be he employer or non-union workman. There can be no arbitration of the questions of limitation of output by decree, of opposition to machinery, of boycotting, of violence against those who elect to work when others have struck, of the right of an employer to employ whom he pleases. Somebody must take a stand against the positions the unions have taken on these questions. And those employers and those organizations whose activity in opposition to union abuses has been most marked, are not to be singled out and placarded as fighting unionism or as opposing conciliation. Neither the National Civic Federation nor any other organization can afford to take any position of neutrality or uncertainty on these prime issues, that involve questions of rights, not of policy or expediency. There are some things in modern trades unionism that are everlastingly wrong and vicious and hurtful. There must be no compromise with them. For the good of industry, for the good of the country, for the good of unionism itself these things

must be put down. The manufacturers and the organizations that help to put them down are fighting the battle for society, for the general good. They should not be pilloried or picked out as foes to organized labor, but should rather be applauded and thanked by those whose battles they are fighting.

In his valedictory as editor of the *Iron Molders' Journal*, David Black calls attention to some things which threaten the welfare of the Iron Molders' Union, notably the unwillingness at times of local unions to be governed by the decisions of their National officers. "Agreements must be ratified," he argues, "and policies outlined as they will promote the general good and not as they will affect any one locality. * * * No labor organization can be successful if the supremacy of its central authority is not fully recognized, and the members of the Iron Molders' Union must rally at once to the support of their central authority and give a demonstration to those who are now evincing a disposition to defy it that such action will receive prompt and effective punishment."

Such counsel is all the more needed, in view of the policy of the unions to broaden their lines and control all the workers in a given industry. The machinists' union voted this week to take in handy men and all who work in any capacity in machine shops, and the Iron Molders' Union has absorbed the core-makers' union and has opened the door to the unskilled machine operator. These expansions will not be without their price in increased radicalism and restlessness of restraint.

But there is another passage in the editorial referred to which is worthy of note. We quote the following:

> If you would know the great changes to which I refer, look around you. Capital is more rapidly than ever concentrating its efforts. The employer of one hundred men is giving way to the corporation that employs its thousands. Economies are being practiced in production that were not possible a few years ago. Specialization is one of the chief economies. This is naturally having its influence upon the complexion of the factory and workshop. It evolves new methods and new conditions. How futile it is to hope to meet them with the rules and regulations, the restrictions and limitations that did service in a former regime. No sane trade-unionist would advocate that the swift-flying electric car be made to give way to its predecessor, the plodding horse-car; and yet, at times, we find them clinging to that which is equally absurd. Conservatism is always preferable to radicalism, but it should never be permitted to degenerate into old-fogyism. There is a happy mean. Find it when dealing with such problems as the molding machine, the apprentice ratio, the limitation of output and the many problems which are daily confronting you.
>
> We cannot prevent change, we cannot prevent the advent of new problems—they represent the progress of the race; but we can intelligently adapt our policy, as a trade-union, to meet them, and not hold with fatuous tenacity to a policy or a rule whose only virtue is its age. There are certain basic principles of trade-unionism which are as enduring as those enunciated in the Declaration of Independence; these we cannot maintain too tenaciously, but we are guilty of no disloyalty to them if we modify or adapt the policy which gives them practical effect, to meet its new surroundings.
>
> Our views must ever broaden. The Iron Molders' Union must not be circumscribed by narrow limitations. It would be stifled if it were. We have opened its doors to the core makers and the machine operators. That is well. It may be necessary to open the door again; allow no prejudice to prevent it. There must be concentration in the trade-union movement as well as in that of the forces of capital, if its effectiveness as a means of protecting the workers in their wages and conditions is to be maintained. With that thought constantly in mind, the future policy of the Iron Molders' Union should, in my opinion, be shaped.

There is breadth and soundness in that. The question is, will the Iron Molders' Union be broad and foresighted enough to give practical effect to these suggestions?

PERSONAL.

Chase Osborn, of Sault Ste. Marie, Mich., who is now traveling in Lapland, mails us three illustrated postal cards, showing iron ore mines within the Arctic circle. Two of these cards gives views at Gellivare, Lapland, with a note by Mr. Osborn that snow on April 20, the day on which he wrote, was ten feet deep and the thermometer registered 40 degrees below zero. Some of the ore from Gellivare goes to Sidney, Cape Breton, N. S. Another card shows the Kürunavaara mountain, Lapland, which, Mr. Osborn states, shows the largest outcrop of iron ore known in the world, the deposit being estimated at 300,000,000 tons of ore. Snow was 10 feet deep April 23 at this place, which is 68 degrees N. latitude.

A. C. Kloman has resigned as superintendent of the Saxton Furnace Co., Saxton, Pa., the change to take effect May 15. He will take up engineering and contracting work, with offices in Cleveland, Pittsburg and Youngstown.

Edward Huber has withdrawn from the firm of McCrosky & Huber, of Cincinnati, manufacturers of adjustable reamers, with which he has been connected for the past three years. He has accepted a position as assistant superintendent in charge of the night force at the large plant of the Bullock Electric Mfg. Co., Cincinnati. Before entering the above firm Mr. Huber was for several years associated with the Bullock company.

W. C. Runyan, president of the Struthers Co., Cleveland, sailed for Europe a few days ago and will spend several months abroad.

William R. Warner, of Matthew Addy & Co., is very ill and at this writing is not expected to recover. Mr. Warner is well and favorably known in the iron trade. His malady is inflammatory rheumatism.

Walter K. Means, for a number of years purchasing agent of Aultman, Miller & Co., of Akron, O., has accepted a similar position with the Ohio Cultivator Co., Bellevue, O.

David Black, for more than seven years the editor of the *Iron Molders' Journal*, has resigned to accept a responsible position with the F. & L. Kahn & Bros., stove manufacturers of Hamilton, O. Mr. Black has conducted the *Journal* with marked ability and his devotion to the interests of his union and his grasp of the problems growing out of the relations of employers and employes have given him prominence in the wage conferences of the National Foundrymen's Association and the Iron Molders' Union. His successor as editor of the *Journal* is J. P. Frey.

The recent sale of $1,000,000 worth of stock by the La Belle Iron Works, Steubenville, O., was, we are officially informed, to raise money to be applied to the payment of the cost of the recent improvements, and to furnish additional working capital required by the increased volume of business. The latest improvement is a second blast-furnace, for which the contracts have been let. This furnace is to be an exact duplicate of furnace No. 1, which was successfully placed in operation April 28.

Seventeenth annual convention Amalgamated Association of Steel Engineers convened yesterday in Pittsburg. Noah R. Pierson, of Baltimore, was elected supreme engineer. The delegates visited the Homestead Steel Works in the afternoon and attended a banquet in the evening.

A NEW BLAST FURNACE TOP.*

BY AXEL SAHLIN, MILLOM, CUMBERLAND, ENG.

One of the most important improvements in blast-furnace construction achieved in the past was the substitution of the closed top for the open tunnel-head, and the consequent saving for heat- or power-generating purposes of practically all of the gas produced in the furnace. During the era of low blast pressures, which yet prevails in this country, and with slowly working blast furnaces, the closed top, consisting of a cast iron hopper merely resting on the brick lining of the furnace, and held in place by gravity only, has answered fairly well. It is true that the top has occasionally been lifted by mild explosions, producing a pressure not greater than from 1 to 2 pounds per square inch inside of the furnace; the usual remedy being to put the hopper back into its old position, to grout up the cracks made by the explosion with a barrowful of clay, and, incidentally, to advise the Labor Insurance Co. that one or two chargers were more or less seriously burned by an explosion. The next explosion may come in a week, or in a few months, or, with good luck, in a few years.

In endeavoring to utilize fine ore and to increase production, higher blast pressures must be employed, and slips occur more frequently. The hopper gives more and more trouble, and means have been sought for holding it in place. Brackets have been riveted to the inside of the furnace shell, to which the rim of the hopper has been bolted. This has prevented the lifting out of the hopper, but the brick-work and floor-plates surrounding it are exposed to periodical shocks and derangements, resulting in gas and air leaks and more frequent explosions.

The placing of explosion doors around the top of the furnace was the next step. These doors, however, cannot in practice be kept tightly closed. Gas continually leaks through the door openings as long as there is pressure on the tunnel head, and air will enter the furnace whenever a stoppage takes place. The explosion doors, therefore, create more explosions than they prevent, and, when the escaping gas from time to time ignites, are apt to cause serious damage to the structure of the furnace top.

To design a furnace top which will not admit air nor permit gas to escape, which can be easily and rapidly changed or repaired, which does not require the stationing of men on top of the furnace, which can be rapidly and mechanically filled without requiring a special operator to run the hoist, and which properly distributes the stock, is, therefore, a problem of importance. A solution is offered by the new Julian Kennedy furnace top, the reasons for the evolution of which I have endeavored to indicate in the above introduction, as they have presented themselves to me in the course of many years of personal experience.

It was in the latter part of 1901 that Mr. Kennedy placed the first of these tops on No. 2 Furnace of the Iroquois Iron Works, near Chicago. In the year which has elapsed since then, fourteen furnaces have been equipped, or are being equipped, with the new top, and in one instance at least, a new automatic hoist of older type, which was lying ready to be erected, was scrapped, and a Kennedy arrangement substituted. This rapid introduction and experience recently gained enables me to speak about the theories of Mr. Kennedy as fully substantiated facts, and justifies me in now placing the new apparatus before the Iron and Steel Institute, and in giving a brief description of the new furnace top. The design of the new furnace top is based on the following now verified assumptions:

1. That explosions inside the furnace top do not take place as long as air is prevented from mixing with the gas.

2. That even if an abnormally rapid combustion of the gas should take place, this will, with a hermetically sealed furnace top, result only in an increase of pressure and a gradual relief of it through the escape afforded by the downcomer and gas piping.

In practice it has been found advisable and sufficient to make all parts of the furnace shell, top, and gas piping suffi-

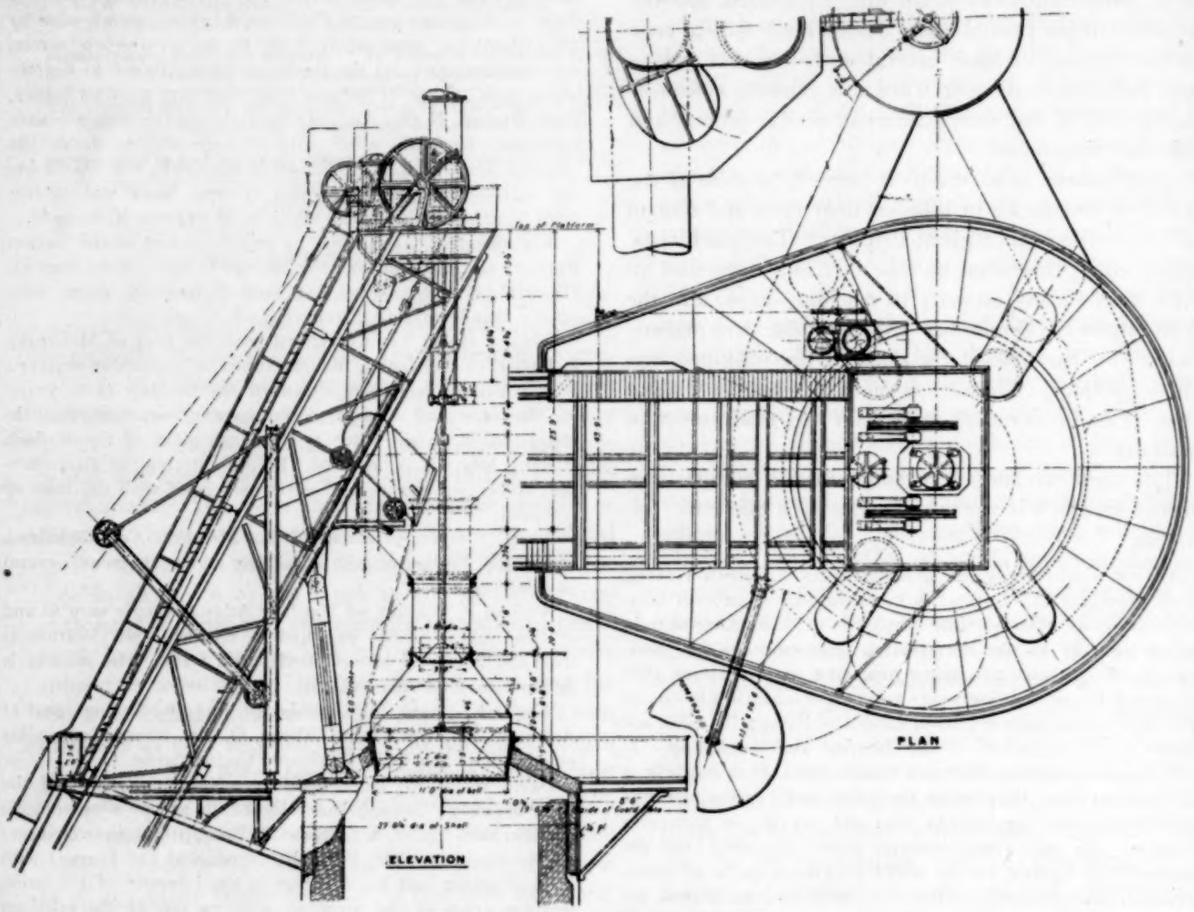


FIG. 1.—KENNEDY BLAST FURNACE TOP.

*Read before the Iron and Steel Institute, London, Eng., May 7, 1901.

ciently strong to carry a pressure of 35 pounds per square inch.

Construction of Furnace Top and Hoist.

The construction of the Julian Kennedy furnace top is shown by the accompanying drawing, Fig. 1.

Furnace Top.—The shell of the blast furnace is built in the manner customary in Great Britain and America, with a shell of steel plates resting on columns. The vertical rivet seams are double riveted, and the whole structure is calked air-tight. The top of the furnace shell is contracted, ending in a frustrum with sides inclined at an angle of about 45 degrees. The top of this frustrum is just of sufficient diameter to permit the lowering of the bell through the central opening, which is finished off with a heavy angle ring of wrought metal or steel casting. About 8 feet below the base of this frustrum inside the furnace a heavy angle ring is riveted to the sheli; this ring supports a 15-inch wall of special, very dense fire-brick, which protects the iron work from the internal heat. This upper protecting wall is exposed to no wear and tear, and does not need to be removed when the furnace is being relined.

Inside of the protecting wall the lining of the furnace expands freely. To minimize the wear caused by the stock striking the lining, brick-shaped blocks of white iron are placed at intervals between the bricks of the inner course.

The gas is taken away from the furnace top by four goose-neck-shaped downcomers, which unite downward into two self-cleaning gas mains conveying the gas into the dust-catcher. The entire top is hermetically closed, no explosion doors being fitted either to the furnace shell or to the downcomers.

The inclined hoist supports two tracks and is formed by three latticed girders firmly bolted to their foundation at the bottom of the furnace. The top of the hoist incline is connected with and supported from the furnace shell by two vertical pin-connected struts. The top ends of these struts rest in bearings riveted to the underside of the hoist girders; their bottom ends rest in shoes of cast steel riveted to the base of the top frustrum of the furnace shell on the side nearest the hoist. These struts form the only connection between the independent inclined hoist and the furnace proper.

Platforms.—Above the bearings holding the struts to the hoist incline the latter extends upward, supporting in a central position above the furnace a strong platform which carries the cylinders for working the bells, as well as the main sheaves for the hoist cables. This platform is provided with suitable hand-rails and ladders, and forms a convenient floor for the attendants who look after the hoist and the cylinders.

A second platform is placed around the furnace top near the top of the frustrum. It is used only when changing bells or when looking after the various parts of the charging apparatus. No men are permanently stationed on either of the top platforms.

Charging Bell and Hopper.—The cast steel seal ring for the bell is bolted to the heavy angle which surrounds the contracted top of the furnace. It is built narrow, so that its lower edge barely extends below the 15-inch brick lining protecting the top. Lifted against the lower edge of this ring we find the main charging bell of the ordinary Parry type cast in steel. This bell is operated by a central bell rod directly connected by suitable pins and rod with the central lifting cylinder. In the flange of the sea ring between the bolts holding the same to the top of the furnace are pockets in which rest the heads of other bolts connecting it with the superimposed conical stock hopper. This hopper is built of steel plates and is provided with doors, fitted with hinges and locks, and intended to give access to the interior of the hopper when required.

Receiving Cylinder and Bell.—The top of the inverted hopper is fitted with an angle ring on which rests the cast steel seal ring for the distributing bell, which latter is a smaller Parry bell suspended from a tube working outside of the central rod of the charging bell. Above this smaller bell is placed the central cylinder for receiving the stock, which is of same construction as those today used on all the modern American furnaces. It has been found that, if rightly proportioned, this central cylinder gives an entirely satisfactory mixture and distribution, even though many kinds of ore are used in one charge. The top of the receiving cylinder is finished off as an oblong hopper, the skips delivering the stock into this hopper on either side of the bell rod. The quantity of each material entering into one round is divided into an odd number of skips. So, for instance, is every round of limestone divided into three skips. In the first round two charges of limestone are delivered by the left hand, and only one by the right hand skip. In the next round two skips of limestone are raised by the right hand skip to one by the left hand. The same arrangement is observed in charging ore and coke. The use of this distributing apparatus is too general on the best and most successful American furnaces to admit of any doubt as to its satisfactory working.

Cylinders Working Bells.—The man charging bell is, as stated above, lifted and held in position by one central plunger-packed cylinder, worked by water, or in cold climates by soda water or oil. The hydraulic valve is operated by light wire ropes from the foot of the hoist incline. The length of the cylinder is such that the bell is given a drop of about two feet, more or less, before the plunger bodies in the bottom of the cylinder. The stroke of the cylinder is, however, about six feet long, the upper part of the stroke being used, in the manner explained further on, only for changing bells. The distributing bell, suspended from a tube through which the central bell rod slides, is also worked by a cylinder through the agency of a counterweighted lever. The counterweight is sufficiently heavy to hold the bell in position even when the central receiving cylinder is filled with material. The power cylinder only lifts the counterweight and permits the bell to drop, delivering the charge around the circumference of the main hopper. This cylinder is also plunger-packed and worked by water, soda water, or oil, according to local circumstances. Its valve is, like that for the main cylinder, operated by the charger from his position at the bottom of the hoist incline.

The main sheaves for the hoist cables rest in pillar blocks with swivel bearings and automatic oiling rings. The pedestals are securely bolted to the top platform. The skips are hauled upward by bails fastened to the hoist ropes and turning upon pins riveted to the outside of the skip near the bottom. The front wheels of the skip are ordinary railway wheels gauged to fit the main track of the hoist. The rear wheels each consist of two railway wheels, the inner pair gauged the same as the front wheels to fit the main track, the outer ones gauged to run on short sections of curved track near the top of the hoist, so bent that these outer wheels mount on the same, tilting the skip and discharging its contents into the hopper at the top of the receiving cylinder. The skips are lined with steel plates, which can be readily renewed when worn. The only parts of the hoist exposed to wear are the cables, main sheave bearings, and skips, for all of which spares can conveniently be kept on hand.

The hoisting engine is entirely automatic. The only manual operation necessary is the starting of the engine, and, of course, the usual periodical attention and supervision necessary for all classes of machinery, such as oiling, packing and adjustment of bolts, joints, bearings, etc. The hoist is driven either by steam or electricity. The latter power results in a saving of from 30 to 40 percent of steam, but, on the other hand, the cost of the electric outfit is about double that of the steam engine. The choice of power is, therefore, reduced to a local question, depending on the value of steam, the length of steam piping required, and, on the other hand, the capacity, position, and arrangement of the electric generating plant available. Both types of engines work with equal reliability and promptness.

The steam hoisting engine is of the two-cylinder, inverted, vertical type, driving by gears a jack shaft supporting the two rope drums. The valves are placed in a central steam chest connecting the cylinders. They consist of two piston valves and a central distributing, throttling, and reversing valve of unique and ingenious construction. The hoist drums are grooved for double wire cables, and are connected by a spool of such length that the ropes lead fairly and directly from the main hoist sheaves on to the drums. The driving gear consists of an inverted steel spur-wheel bolted to the drum and a machine cut steel pinion keyed to the crank shaft, which also carries a powerful automatic band-brake.

The engine once in motion, the throttle valve is regulated by

a system of shafts and levers worked from an eccentric cam driven by a gear on the outboard end of the drum shaft. This end takes the shape of a heavy, square-threaded screw, on which are clamped two adjustable lock-nuts. Between these a loose nut travels without turning until it engages with one of the lock-nuts, and thereby is compelled to revolve. In so doing it turns the gear and the eccentric cam, which throttles the steam and finally cuts off both steam and exhaust, at the same time as it applies the band-brake. By adjusting the lock-nuts, the action of the cam is readily regulated to retard the speed and stop the skips exactly at the points desired. The whole controlling gear, being heavy and direct in its action, may positively be relied on, and all button ropes or other auxiliary safety devices dispensed with.

The electric hoisting engine is fitted with rope drums similar to those of the steam engine. A motor of 120 to 150 horse-power takes the place of the steam engine. A geared counter-shaft is introduced between the crank and drum shaft in order to reduce the speed. The electric stop and safety devices, the solenoid brake, and the rheostat are all governed by an automatically worked device attached to the outboard end of the drum shaft, which retards and interrupts the motion of the hoist at the points desired.

A swinging crane for lifting the bell or seal ring, or both together, is placed in a suitable position on the lower platform, the top of the same being supported from the hoist incline. Over this crane, which is fitted with sheaves, runs a wire rope, armed at the upper end with a strong hook or clevice, while the lower end extends to a winch placed near the bottom of the furnace, or may be attached to a locomotive.

The changing of the bell is done in the following manner:

(1) The tube working the small stock bell is clamped to the main bell rod.

(2) The bolts holding the main seal ring to the top of the furnace shell are removed.

(3) Water is turned on to the main cylinder operating bell. This is now worked to its full stroke, lifting bell, seal ring, hopper, and stock cylinder upward until the lower edge of the bell is above the top of the furnace shell.

(4) Two rails kept handy on the lower top platform are slid under the bell, which again is lowered until it rests on them.

(5) The pin coupling the bell to the bell-rod is now readily reached and removed through the doors of the hopper.

(6) Water is again turned on the central cylinder, which this time lifts the seal ring, hopper, and stock cylinder, leaving the bell standing on the rails.

(7) The crane is swung round and coupled to the bell, which is moved sideways, lifted from the rails, swung clear of the furnace, and lowered to the ground.

(8) The worn-out bell is now detached from the wire rope, the new bell to be put in place is coupled on to the rope, hoisted to the furnace top, slid on to the rails, and placed in a central position under the suspended hopper.

(9) The hopper is lowered onto the new bell until it rests on the same. The pin connecting the bell-rod to the new bell is put in place.

(10) Water being again turned on to the central cylinder lifts the bell, seal ring, hopper, and stock hopper clear of the rails.

(11) The rails are removed, and the new bell, with seal ring, hopper, and stock hopper, are lowered into their permanent position.

(12) The holding-down bolts are replaced, and the tubular bell-rod is unclamped from the central bell-rod. The furnace is now ready for operation.

The time required in practice for the furnace crew of eight men to change bell varies from two to three hours. Any furnace man who, like the writer, has worked a furnace for six months with a bell of unsuitable size for distributing the ore which he is at the time compelled to work, to avoid the loss of time which would be incurred in dismantling the charging gear and changing bell, will join in recognizing the enormous importance of being able rapidly to replace this important part of the furnace mechanism.

The advantages claimed for the new furnace top are:

(1) The freedom from explosions as proven by practice; no air entering into the furnace.

(2) Absence of gas leaks and dust around the furnace top.

(3) Simplicity and durability of construction.

(4) Rapidity and cheapness of the operation of changing bells and seal rings.

(5) The automatic working of the hoist, which requires no attendants on top and no hoist engineers, thus saving on a medium size furnace the labor of nine men. The weighman or the man operating the electric charging larry has sufficient time also to operate the hoist and bells.

(6) The cheapness of the construction as compared with other modern hoists now in use.

Bassett-Presley Co.'s Improvements.

The Bassett-Presley Co., Cleveland, jobber in iron, steel, tin plate, metals and telephone supplies, has just finished and is now moving its stock into its new warehouse on Clifton St., between St. Clair and Superior Sts., on the Pennsylvania Railroad. The building measures 360 by 150 feet, and is two stories, the first story being 23 feet high and the second 12 feet. On the first floor are the office of the shipping clerk and the main store room, in which will be kept the heavier kinds of stock, such as plates, sheets, iron and steel bars. The first floor is paved. On the west side is a track of the Pennsylvania Railroad, very conveniently located for loading and unloading from cars. On the east side there is a driveway of 160 feet into the building, so that wagons can be brought in and unloaded under protection from the weather. On the second floor there are two store rooms, one of which will be heated for the preservation of highly finished materials which might be damaged if exposed to changes of temperature. On this floor is also a lunch room for the employes.

Immediately south of the warehouse, the company has recently purchased a site for an office building, which will be 96x50 feet, two stories. This will be erected during the summer and will be occupied by the office force, now located in the Western Reserve Building. On the first floor will be the general offices and on the second will be a directors' room, salesmen's offices, dining room and kitchen. Luncheon will be served at noon daily for the office employes. Special provision will be made for the comfort of the lady stenographers.

The erection of these new buildings indicates the progress which has been made by the Bassett-Presley Co. since its modest start in business 17 years ago, until now it is recognized as one of the leading jobbing companies in the country. The business was established in 1886 by Ira B. Bassett and George Presley and was continued as a partnership until two years ago, when the Bassett-Presley Co. was incorporated. Mr. Presley died August 17, 1902. The present officers are: President, Ira B. Bassett; vice president, E. D. Rogers; treasurer, F. H. Dietz. F. W. Beach is in charge of the metal and tin plate department. President Bassett is a firm believer in the policy of sharing profits with those who have assisted in making the business a success, and many of the employes are stockholders of the company.

The Christensen Engineering Co., of Milwaukee, has found it necessary to provide increased office facilities in Chicago. A large office, fully equipped with every convenience, has just been opened in the Old Colony Building, where representatives of both the air brake and electrical sales departments will be found. Chas. G. Burton, manager of the Chicago agency for the safe of the company's "Ceco" electrical machinery, has removed from the Merchants' Loan & Trust Building into the new office. The air brake department is in charge of J. E. Eldred, Jr., who for a considerable time has represented the company in the sale of air brake equipments.

The Vulcan Facing Co., of Easton, Pa., has its new plant in operation. It is a modern mill, equipped with improved appliances for the grinding of high-grade foundry facings, of which the company manufactures a full line.

The Ball Engine Co., Erie, Pa., has been awarded a contract for 14 engines, amounting to 2,400-h. p., for electrical purposes in sugar factories. The engines will all be direct connected to Crocker-Wheeler generators.

STANDARD METHODS FOR ANALYZING IRON.

Herbert E. Field, secretary of the metallurgical section of the American Foundrymen's Association, has contributed to the Proceedings of the section the following, which is introductory to a series of articles dealing in detail with methods of determining the various elements found in pig iron and in castings:

As early as 1899 the American Foundrymen's Association instructed its standardizing committee to take steps looking towards the adoption of standard methods for determining the constituents of cast iron. The complaint from furnaceman and founder that the results of different chemists did not agree had become so pronounced that the association determined to remedy this trouble if possible. It is a well-known fact that very few chemists use exactly the same methods in analyzing iron. This great variation in methods used made possible a source of error which could be overcome by the adoption of standard methods. This question has been prominently before iron chemists for some time, and American, German and Swedish committees have already taken up the methods for the determination of carbon in iron. The American Committee has made its decision in favor of the so-called Copper and Potassium Chloride method. The fact that this method has been generally adopted by American chemists would indicate that a complete list of standard methods would have a similar reception.

The adoption of standard samples by the American Foundrymen's Association has been a great help towards more accurate commercial work in chemical laboratories. The improvement in methods of sampling pig iron now before this association for consideration is another step towards the same end. With purer chemicals and standard methods for analysis, the bugbear of inaccurate chemical work will be abolished. The error, if there be any, will have to be placed on the operator.

This would be an idle condition in which all foundry and furnace laboratories used the same method of sampling, the same standards for guides, and standard methods for their analysis work. The most ardent supporters of the scheme for standard methods can only hope to approach this ideal. The varying conditions under which different chemists work render impracticable the adoption of rigid standard methods. The work of the association, to be of permanent value, must be sufficiently flexible to conform itself to all conditions of iron analysis. The furnace laboratory, the commercial laboratory with several chemists and the small foundry laboratory with its single chemist present three different phases of the question which must be considered. In many furnace laboratories the casts of one day must be analyzed and ready for piling or shipping the next morning. This makes absolutely necessary the use of methods which give rapid results. The malleable foundry's product may require to be analyzed for silicon while the bath is still molten. The large commercial laboratories must use methods which give prompt results, thus making way for new work.

In contrast with these are the increasing number of small laboratories in separate foundries, each with its single chemist. The aim of the latter is to accomplish the greatest possible amount of work within a specified time, rather than to finish one determination in the shortest possible time. In the former case methods are indispensable which give immediate results regardless of the amount of labor required during that time. In the latter case methods which require the least amount of actual time of the chemist are the best suited.

In order to find out just what methods were in use in the different iron laboratories, Mr. West, chairman of the standardizing committee, sent requests to many chemists asking them to furnish him a description of the methods used in their laboratories. A considerable number of replies were received to these requests, which, in course of time, were referred to the secretary of the metallurgical section for editing. The number of replies received was not as large as was desired, and an effort will be made to obtain a more representative collection.

The methods sent in are being classified and edited and will be published in the Journal as fast as this work is completed. These classified results will be sent out to chemists all over the country with a request that any methods or operations not included in the report, be sent to the committee. When a sufficiently representative collection is secured, the matter will be referred to a committee for the purpose of selecting the most suitable for use as standard methods. It would be impracticable to publish in detail each and every method sent to the committee. They will be outlined in one general scheme and all methods, or modifications of methods, will be included in this outline.

Ore Stocks on Lake Erie Docks May 1.

Figures gathered from the various Lake Erie dock managers by the *Marine Review* are given below, showing that on May 1, deducting new ore brought down in April, the stocks of iron ore at Lake Erie ports were 3,592,367 tons. This is to be compared with 2,848,194 tons on May 1, 1902, 3,050,183 tons on May 1, 1901, and 1,720,656 tons on May 1, 1900. The amount of ore put on merchant docks in April this year, of which no account is taken in the above figures, was 85,785 tons. Much of the ore that came down in April went to furnaces direct, or was taken over the docks of consumers—like the American Steel & Wire Co., at Cleveland, the Lorain Steel Co., at Lorain, or the Buffalo Furnace Co., at Buffalo. The following table shows the stocks on docks on May 1, 1901, 1902 and 1903, by ports, with the amount on the same docks on Dec. 1, 1900, 1901 and 1902:

Ports.	CLOSE OF NAVIGATION.			OPENING OF NAVIGATION.		
	Dec. 1, 1900.	Dec. 1, 1901.	Dec. 1, 1902.	May 1, 1901.	May 1, 1902.	May 1, 1903.
Toledo	242,375	254,196	310,023	138,453	111,511	126,331
Sandusky	95,111	4 ,384	95,175	63,148	37,400	56,500
Huron	211,377	231,501	232,764	135,647	129,635	147,817
Lorain	251,858	195,863	328,304	140,562	66,992	190,311
Cleveland	1,337,445	1 378,060	1,500,604	806,119	624,865	829,347
Fairport	611,717	710,590	924,236	306,7.6	472,325	555,709
Ashtabula	1,8 1,459	1,769,145	1,967,136	1,046,974	934,742	1,073,967
Conneaut	631 514	604,1c6	673,679	69,755	132,891	125,400
Erie	480,734	470,718	722,966	225,412	223,972	426,744
Buffalo	232,1c0	198,100	319,367	118,007	73,861	60,241
Total	5,904,670	5,859,663	7,074,254	3,050,183	2,848,194	3,592,367

The total rail shipments from Lake Erie ports to furnaces in the winter of 1902-1903 appear by comparing dock stocks on Dec. 1, 1902, and May 1, 1903:

	Gross tons.
On dock Lake Erie ports, Dec. 1, 1902	7,074,254
On dock May 1, 1903	3,592,367
By rail to furnaces, winter of 1902-3	3,481,887

The shipments to furnaces in the seven months from May 1 to Dec. 1, 1902, together with the consumption by furnaces at Tonawanda, Buffalo, Cleveland and Lorain, receiving ore direct into their own yards, amounted to 18,423,364 tons. Adding to this the shipments from docks to furnaces in the past winter—3,481,887 tons, as above—gives 21,905,251 tons as the total amount of ore taken into furnace yards from Lake Erie docks in the year ending May 1, 1903. This is as against 17,215,065 tons in the year ending May 1, 1902, 14,468,260 tons in the 12 months ending May 1, 1901, and 15,574,785 tons for the 12 months ending May 1, 1900.

The amount of ore on dock this spring, as shown by the above figures, is somewhat less than was expected, preliminary estimates having put it at about 4,000,000 tons. As compared with the consumption this is a smaller percentage of the total than the average of the past half dozen years. The time was, not long ago, when 1,500,000 to 2,000,000 tons on docks at the opening of navigation constituted an effectual damper on the trade.

The announced freight rate by boat between Detroit and Cleveland on iron and steel articles is 8 cents per 100 pounds in carload lots and 10½ cents per 100 pounds for less than carloads.

The Tidewater Steel Co., Chester, Pa., has made a contract with the National Tube Co. to supply about 20,000 tons of steel skelp, to be used at the South Chester works.

The article on a "New Speed Changing Device," on page 72 of our issue of May 7, says that there is a total of nine gears giving eight speeds. This should read nine speeds.

LAKE SUPERIOR IRON MINES.

The first cargo of ore was handled a few days ago at the new dock of the Wisconsin Central Railroad, Ashland, built to take the place of the dock destroyed by fire last fall. The dock proper is the same length of the old one, 1,884 feet. Together with the approach it is over 4,000 feet. There are 314 pockets in the structure, 157 on each side. Each of these pockets is capable of holding 154 tons of iron ore, thus making the capacity of the dock 48,356 tons. The height of the present structure is sixty-six feet or twelve feet higher than the old dock. The width is about the same as the old one, nearly 38 feet. Some of the timber used in the construction of the dock was purchased in Oregon as none could be secured any nearer which would answer the purpose. A feature of the new dock is a fire wall every 200 feet as a protection against another conflagration such as the one last fall. Another feature of the dock is an automatic sprinkling apparatus, which is connected with an eight-inch water main. With one stroke of a crank the entire surface can be sprinkled. The new dock is the only one in the world which has these two features.

The Duluth correspondent of the New York *Commercial* says:

"Experiments have been made in the smelting of titaniferous magnetites in an ordinary foundry cupola at St. Paul in order to raise money among Duluth men for the exploitation of the magnetite belt east of the Mesaba range. Some hard, dense, short pig iron was made and the success of the experiment was widely chronicled. There is no success as yet, and there is nothing learned by the tests that was not known before. It was claimed by the experimenters that a steel had been made direct from the ore, but this is not true; the result is nothing but an inferior pig iron. Experiments will be continued and it may be that in time success will be met."

The parties who are exploring a part of section 6-57-20, near Hibbing, are finding a good deal more ore than was represented to them when the option was taken. In one new hole they have cut more than 100 feet of ore, adding about 1,000,000 tons to the amount in sight. This option expires in June.

All the drills that had been on the Western Vermillion and on the Mesabi west of the Mississippi River by the Great Northern road have been withdrawn, the road having abandoned the hope of ore bodies there. If the ore-bearing formations extend thereaway they are deeply covered by drift and it will take an immense amount of exploration, or considerable blind luck, to locate ore. There is no reason to question the fact that these formations do extend west of where they have been located, but how far or in just what direction is not known. North of Hibbing, in what has been called, for the lack of a better name, the western extension of the Vermillion range, there have been signs of ore known for many years. In 1891, when N. H. Winchell first mapped the Mesabi range and the ore-bearing formations of northeastern Minnesota on a large scale, he marked spots in that district where these showings occurred, and referred to them in his accompanying book as similar to the showings then had where the Mountain Iron mine now is. But no exploratory work has ever shown these showings to have been of much value and nothing is now under way in the district.

The Great Northern road has let contracts for an extension from the Hawkins mine, in 32-57-22 to the Diamond in 15-56-24, the most westerly find of importance on the range, and only about ten miles east of the Mississippi river.

M. L. Fay, one of the pioneers of the Mesabi range, has recently bought a fine iron showing in the Birmingham district, Alabama, and will develop it at once. The tract he has bought lies directly between two developed mines and is considered a sure thing. Mr. Fay has been interested in the exploration of several good Mesabi range mines and has made much money.

Shenango mine, of the Shenango Furnace Co. (W. P. Snyder & Co.), will be shipping soon. This mine is now working in a third shaft, both those sunk before having been failures.

Ohio mine, near Michigamme, Mich., is getting into shape, and a 40-drill compressor and a large hoisting plant are ready to run. The mine will be shipping ore this year.

From the old Felsh mountain district about 40,000 tons of ore will be shipped this year, all from the operations of G. A. St. Clair, of Duluth, and all for the Buffalo Steel Co.'s furnaces. The Felsh mountain region received so severe a black eye years ago that the Chicago, Milwaukee & St. Paul road, which reached the mines there, tore up its track and abandoned the region, even abandoned ore hauling and gave up the Menominee range to the Chicago & Northwestern road. Several explorations are under way by Mr. St. Clair and others, and there are hopes of more mines than the Northwestern.

Corrigan, Kinney & Co., who are to open a mine a few miles west of their Stevenson, have named it the St. Paul. This property will probably be opened for shipment by another spring.

The new Stevens mine of the Oliver Iron Mining Co. will commence shipments in a short time. It will be a large shipper, and is able to mine as much ore as can be taken away by the roads.

Allis-Chalmers Co. to Build Large Gas Engines.

A. Rieppel, of Nurnberg, Germany, managing director of the Augsburg Nurnberg Mfg. Co., known for many years as the of the largest builders of structural iron work, engines, cars, bridges, etc., in Europe, is now visiting this country for the first time. His works employ about 16,000 men and now have over 2,000 at work on the bridges of the new railroads being built by Germany in China. Their latest development has been with gas engines, both for gaseous and liquid fuel. They have long built these engines in smaller units up to 400 h. p. and operated with petroleum, but for the use of waste gas as well as producer gases and in larger units they have recently brought out an entirely new design, constituting the result of many years of extensive experience. The engine, which is of the double acting four cycle type, generally in tandem arrangement, is best adapted for the various purposes of modern power development up to the largest units required by municipal central stations and iron and steel works.

Mr. Rieppel's visit to this country was made to interest the Allis-Chalmers Co. in the manufacture of the products of his company. A contract was entered into by the two companies giving the Allis-Chalmers Co. the exclusive right to manufacture and sell the Nurnberg gas engine for this country and selling rights in many foreign countries, especially the far east and South Africa. The Augsburg Nurnberg Mfg. Co., under the direction of Mr. Rieppel, has made a marked success with this new gas engine, having within the past few months received orders for some 50,000 h. p. throughout Germany and Spain, chiefly for generating electric energy and for blast furnace and spinning mill work. One of these engines now being built is for an important spinning mill in Northern Germany, where the engine will be operated by producer gas. Mr. Rieppel is now on a tour of inspection throughout this country. He will visit the new works of the Allis-Chalmers Co. at West Allis, Wis., where these engines will be built.

In the agreement entered into between the New York Metal Trades Association and the Brotherhood of Boiler Makers and Iron Shipbuilders of America which brought about the conclusion of the recent strike, it is provided that there shall be no sympathetic strikes; that no person other than those authorized by the employer shall interfere with workmen during working hours; that the employer may employ or discharge, through his representative, any workman as he may see fit; but no workman is to be discriminated against on account of his connection with a labor organization.

A small coke plant at Cokeville, near Blairsville, Pa., owned by the United States Steel Corporation, has been ordered closed and as the coal is about exhausted it is expected there will be no resumption.

THE FOUNDRYMEN'S ASSOCIATION.

The regular monthly meeting of the Foundrymen's Association was held at the Manufacturers' Club, in Philadelphia on Wednesday evening, March 6, the president, Thos. Devlin, occupying the chair. The following were present:

Geo. Rominger, Girard Iron Works.
Wm. Dette, Wm. Dette & Co.
Philip C. Smith, Ingersoll-Sergeant Drill Co., Easton, Pa.
O. J. Ward, Howe Scale Co.
A. G. Warren, J. W. Paxson Co.
Wm. Adams, Wm. Adams & Co.
T. B. Harkins, T. B. Harkins & Co., Bristol, Pa.
Thos. Devlin, Thos. Devlin Mfg. Co.
P. D. Wanner, Reading Fdy. Co., Reading, Pa.
Mr. Einwechter, Girard College.
Jas. McAnnally and H. P. Jackson, Harlan & Hollingsworth Co., Wilmington, Del.
F. F. Newcomb, Wm. Dette & Co.
T. R. Coggeshall, Girard College.
W. H. Shelmire, Jr., Creswell & Waters Co.
W. S. Bickley and N. D. Powell, Penn Steel Casting Co., Chester, Pa.
Eugene Buckman, M. Sims, New Haven, Conn.
R. C. Oliphant and S. M. Oliphant, Trenton Mall. Iron Co., Trenton, N. J.
H. O. Evans, Thos. Devlin Mfg. Co.
Thos. J. Kelley, Abram Cox Stove Co.
Jno. Glover, Glover Bros., Frankford.
A. A. Miller, *Iron Age*.
Thos. Holt, Camden Fdy. Co., Camden, N. J.
Geo. C. Davis, Chemist.
P. L. Lanning, Perseverance Iron Co.
A. Simpson, Wm. Wharton, Jr., & Co.
Godfrey Luckhardt, Cohocksink Brass Fdy.
Geo. W. Walker, J. Thompson and Ed. L. Wallace, J. Thompson & Co.
C. D. Matthews, Camden Iron Wks., Camden, N. J.
Edwin C. Wills, Evans-Wills Process Co., Rahway, N. J.
R. S. Newbold, R. S. Newbold & Son Co., Norristown, Pa.
A. E. Outerbridge, Wm. Sellers & Co.
Dr. Edmund A. Engler, Worcester Polytechnic Institute, Worcester, Mass.
E. E. Brown, C. R. Brown and A. D. Wallace, E. E. Brown & Co.
W. H. Ridgway, Craig Ridgway & Son Co., Coatesville, Pa.
P. S. Braucher, P. & R. Shops, Reading, Pa.
J. S. Hibbs, J. W. Paxson Co.
Fred. Bateman, Bateman Mfg. Co., Grenloch, N. J.
A. W. Lilley, Olney, Pa.
J. Hy. Pepper, *The Iron Trade Review*.
Wm. Hanson, Pennsylvania Iron Works.
H. A. Gillis, American Loco. Co., Richmond, Va.
Dr. Edward Kirk, Fred. Sabin and Wm. Holten, North Wales Fdy. Co. North Wales, Pa.
J. R. Lawrence, Jerome Kelley & Co.
W. O. Steele.
Dr. G. Alleman, chemist, Swarthmore, Pa.
Edw. D. Vaill.
W. P. Dallett.
M. P. Walker and H. W. Coleman, J. K. Dimmick & Co.
Howard Evans, J. W. Paxson Co.

The treasurer's report was presented and showed the association to be in a good financial condition.

The committee having in charge the preparation of the memorial on the death of the late president, Thos. I. Rankin, presented resolutions which were adopted.

The Cresswell & Waters Co., Nicetown, Philadelphia, was elected to membership in the association.

Foundry Work at Worcester Polytechnic Institute.

Dr. Edmund A. Engler, president of the Worcester Polytechnic Institute, Worcester, Mass., presented a paper on "Foundry Work at the Worcester Polytechnic Institute." It was illustrated by lantern slides. We make the following extracts:

"All that has been said with reference to the work in the machine shop applies with equal force to the work in the foundry. Here also the student receives systematic instruction in foundry practice which extends through all years of their course of study, and is so graded as to make most effective the training which they receive in other subjects, such as drawing, descriptive geometry, pattern-making and chemistry. He is taught the names, grades and characteristics of materials, tools and appliances used; simple bench molding; simple core work; making and using plaster of paris plates or match boards; floor work in green sand; use of three and four-part flasks, false cheeks, etc.; advanced bench and by bedding-in; use of sweeps, part-patterns, etc.; advanced molding and core making; dry sand work, charging and care of cupola; mixing and testing metals; brass molding, and advanced special work; the whole occupying for each student more than 400 hours under expert instruction.

"This work is now conducted in the new and thoroughly modern building, completely equipped with the latest appliances and conveniently arranged with a view to securing the best results with the least expenditure of time and energy, and under the best possible sanitary conditions as to heat, light and ventilation.

"The new foundry with its excellent equipment is, like most installations in educational work, an evolution from the simplest beginnings, from which it has grown gradually as the importance of the work has demanded. Never in the history of the art has the importance of founding been so universally recognized in the engineering world as it is today. The Worcester Polytechnic Institute, quick to note this awakening interest in founding, was among the first institutions of its kind to offer its engineering students a comprehensive course in foundry instruction. Its first attempts in this direction included casting in white metal only. Some of its older graduates will remember the little crucible furnace and the few wooden benches, or troughs, which at one time constituted the 'foundry.' This plant was located in the wood-working department, but, crude as it was, its installment marked the beginning of a movement which has grown by what it fed on into considerable proportions. Later, a reasonably complete little foundry was established in an ell of the Washburn shops, with a very respectable cupola, as well as crucible furnaces, core oven, traveling crane and other facilities. This little foundry became popular from the start and the work done there, both educationally and commercially, soon outgrew its very limited quarters. It was from this state of things that the necessity for a new, and larger and better equipped building arose, and this necessity has been met by a contribution of generous friends of the Institute who have provided the means necessary to erect and equip the splendid foundry building which the students at the Institute now enjoy.

"The building which has been erected for foundry purposes is 90 feet long and 52 feet in width. Its frame is of steel, and its outer walls, which are 21 feet high, are of red brick with sandstone trimmings and granite underpinning. Its roof is covered with gravel, and has a monitor 8 feet high, 21 feet wide and 72 feet long. This monitor is amply provided with windows which can be quickly adjusted for ventilation. The outer brick walls of the building also have a good number of unusually large windows, which make the interior exceptionally light and airy. In general appearance the building harmonizes with its suroundings.

The interior arrangement is as follows: On the east side there is a gallery 11 feet high, 15 feet wide and 90 feet long—the length of the building itself. A small private office is located at the north end of this gallery, and at the south end there is a power room 10 feet wide and 15 feet long. Portions of this gallery are made exceptionally strong for heavy storage, and the central part serves as a charging floor. The stack room is directly under this central portion and is enclosed by brick partitions. It is 14 feet wide and 24 feet long, and contains two cupola furnaces. One of these furnaces was designed at the Washburn shops and has been in successful operation there for the past six years, in the little foundry before referred to. It lines up at 26 inches and is capable of melting a ton and a half of iron per hour. The other furnace is of the Whiting type, and is at present lined up at 32 inches, although it can be increased to 37 inches. This cupola will melt from three to five tons of iron per hour. Besides these two cupola furnaces there are in this room two crucible furnaces. A 3,000-pound hydraulic elevator works between this stack room and that part of the gallery which serves as a charging floor, and is accessible from an outside door on a level with a driveway between the foundry and the Washburn shop.

"The pickling plant is on the ground floor just south of the stack room. The system requiring a stationary platform has been adopted. The vat itself is of solid granite

floor work; construction of pits or beds; green sand molding and is located between the platform and the catch-basin, just within reach of the drip from the platform. The trough which conducts the water from this drip to the catch-basin when the castings are being washed, is attached to, and forms a part of, the cover to the vat. This arrangement obviates all danger of loss of vitriol through the negligence of the operator. He cannot get at the interior of the vat to dip the vitriol without taking off the cover and with it the trough leading to the catch-basin, thus necessarily removing all possibility of the surplus vitriol wasting from the platform into the basin and thence to the sewer. The southeast corner of the foundry is occupied by the rattlers, and between them and the pickling plant the castings receive the preliminary cleaning.

"A tunnel, 6 feet wide, 7 feet high and 36 feet long, leads from this part of the foundry to the basement of the north wing of the Washburn Shops. All castings pass through the tunnel for their final cleaning in this basement. A coreroom is situated at the southwest corner of the foundry. It is 15 feet wide and 32 feet long, and is divided from the molding floors by brick walls only two and one-half feet in height, high enough to prevent the sands of the core room from mixing with those of the molding floors, but not high enough to interfere with the light or the successful working of the heating and ventilating systems. This room is fitted up with core benches and shelves for finished cores, and a core machine.

"The core oven is near the south wall of the building and forms a part of the east boundary of the core room. It has the following interior dimensions: Seven feet wide, 6½ feet high and 12 feet long. It is fitted with double doors, adjustable shelves, and a heavy truck lor large cores, and the Millet system for small work. The fire-pot is accessible from the exterior of the east end, which is nearest the coal bunkers. Openings in the interior flues are so arranged with dampers that the heat can be conducted to different parts of the oven as desired.

"The room for casting in brass and other compositions is located under the north end of the gallery adjacent to the stack room, and like the core room, is divided from the main part of the foundry by a low brick wall. It has the same width as the gallery itself, 15 feet, and is 32 feet long. A trolley connects this room with the crucible furnaces.

"On the main floor of the foundry the portion on the west side extending beyond the monitor is devoted to bench work and the entire portion under the monitor is used for floor work. A five-ton traveling crane works over this central portion covered by the monitor, and is so designed that, as the demands on the foundry increase, this crane can be divided into two independent cranes, each having one-half of the capacity, or two and one-half tons, and a heavier crane can then be added. Besides the traveling crane there is a one-ton jib crane located near the southwest corner of the stack room. It will reach to the large cupola and will swing over a portion of the molding floor, cleaning room and pickling platform.

"The building has four outside doors. One is at the north end and is sufficiently wide to admit a team. The other three are on the east side. The most northerly of these three leads to the gallery and to the main floor of the foundry. The other two are for freight. The central one leads to the elevator and that farthest south to the gallery. The driveway at this point is of such height that a cart standing there is level with the gallery floor. The building is lighted throughout by electricity. Besides a generous supply of the ordinary 16-c. p. incandescent lamps, four, three-glower, 144-c. p. Nernst lamps are used with excellent results.

"The indirect system of heating has been adopted. A 70-inch Sturtevant fan, located in the power room, draws either inside or outside air between the pipes of a steam radiator containing 1,800 square feet of heating surface, and distributes it at the desired temperature through long sheet iron pipes to different parts of the building. In very warm weather or during the time when the men are pouring off, cool air can be thus circulated throughout the foundry.

"Besides the fan referred to, the power room contains a No. 7 steel pressure blower, and a fifteen-horsepower electric motor. The pressure blower supplies the blast to the two crucible and two cupola furnaces in the stack room, and the motor drives the entire plant, including the rattlers which are on the ground floor below. By an ingenious arrangement of clutches any part of this plant can be thrown out of action without disturbing the other connections. Two Morse flexible chains are used in these different drives and although one is laboring under the full load on the motor and is traveling at the rate of nearly 2,000 feet per minute, and the other is driving the steel pressure blower at 2,300 revolutions, both are giving very satisfactory service.

"The connection of the foundry with the basement of the north wing of the Washburn Shops by means of the tunnel renders this basement a most convenient adjunct to the foundry itself. In it are the water closets, wash and locker rooms; the room for cleaning and storing castings; the bunkers for core sands and molding sands, coal, coke and other foundry supplies. In the near future a trolley will be constructed which will extend from this basement, through the tunnel, into the foundry. Without this basement, but including the gallery, the foundry contains 4,896 square feet of floor space. With the basement, or that part of it which is practically devoted to foundry purposes, the total space available to the foundry department amounts to 7,324 square feet.

"With the equipment just described, and shown by the illustrations, it will be seen that opportunities are offered the students of the Worcester Polytechnic Institute for genuine instruction in foundry practice under the most approved conditions. Not only are they taught all the various processes of foundry work, but they are constantly under the care of competent instructors, and in the presence of some dozen journeymen who are engaged on commercial work which is constantly before them and about which they cannot fail to learn."

E. Cooper Wills, of the Evans-Wills Co., Rahway, N. J., then described the Evans-Wills process for making steel castings from cupola metal. Several lantern slides were shown. Mr. Wills' address was on the lines covered by the article on the process appearing in *The Iron Trade Review* of March 26. A short discussion followed which brought out the fact that among the principal advantages claimed for the process are the complete control possessed by an operator, and the adaptability of the process to the production of small quantities of castings.

Rapid Work in Ore Unloading.

Some unusual work has been done in the unloading of ore at the Conneaut, O., docks in the past week. On Thursday, May 7, the steamer James H. Hoyt, with 5,300 tons of ore, was unloaded in 5 hours and 40 minutes with four Hulett machines. All the cargo was taken out by the use of the machines, no cleaning up by hand labor being necessary. There was about one hour of waiting time because cars were not at hand, the actual operating time being 4 hours and 43 minutes—an unprecedented record. The Hoyt was especially fitted up for the use of these machines, the hatches being 12 feet between centers.

On Saturday, May 9, another record was made at Conneaut, the boat in this instance being of the ordinary type, hatches 24 feet centers, having been built four or five years ago. The cargo consisted of 6,200 tons of ore. Unloading was begun at 9 o'clock a. m. and at 12 o'clock it was estimated that 70 percent of the cargo, or about 4,300 tons, was discharged. Half an hour was lost waiting for cars to be switched in, so that the actual running time of the Hulett machines was 2½ hours.

The spring meeting of the American Society of Mechanical Engineers is to be held at Saratoga, N. Y., beginning June 22.

RAILWAYS FOR INDUSTRIAL PLANTS.

A section of light steel rails is shown below in Fig. 1, which is especially adapted for use where it has to be cemented into the floor, as in boiler rooms, etc., where it must not extend above the surface. In some cases, however, the use of double rail track, as shown in Fig. 2, is desirable in stone or cement floors, where the passage of ordinary road vehicles, barrows, etc., cannot be obstructed, as for instance in factories, factory yards, wharves, etc. This system has been extensively adopted in breweries, factories, paper mills, and in fact in large plants of all kinds.

Instead of single rails, as in case of regular light railways, two ordinary tee rails are placed close together on each end of the track, mounted on steel ties, as shown. The track is sunk in the floor or ground so that the tops of the rails are flush with the ground level, and the space between the two sets of rails is leveled up with concrete, wooden blocks, bricks, etc. The wheels run on the outer rails, the wheel flanges traveling in the slots between the outer and inner rails. The manufacturer is Arthur Koppel, 66-68 Broad St., New York.

Loomis-Pettibone Gas Machinery Co.

The Loomis-Pettibone Co., 52-54 William St., New York, has changed its name to the Loomis-Pettibone Machinery Co., increased its capitalization to $2,000,000, and is about to begin the construction of a large plant near New York, for the manufacture of gas engines in large units, in addition to the Loomis-Pettibone gas apparatus, which it will continue to manufacture as heretofore. The officers and directors are: Benjamin Guggenheim, president; Cyrus Robinson, first vice president and general manager; Burdett Loomis, Jr., second vice president and manager sales department; Leon P. Feustman, secretary and treasurer; Burdett Loomis, Sr., consulting engineer; Hawley Pettibone, chief engineer; Charles E. Finney.

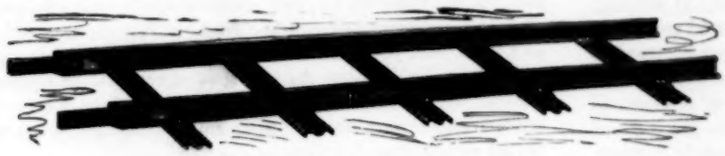


FIG. 1.—SECTION OF LIGHT RAIL TRACK.

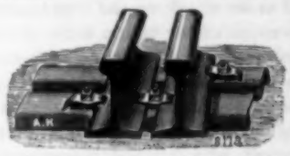


FIG. 2.—SECTION OF DOUBLE RAIL TRACK.

The company is now prepared to enter into contracts for the equipment of complete plants, gas generators, gas engines, and electric generators and motors. Until its own plant is ready to turn out large gas engines it will deliver the engines manufactured by Crossley Brothers, Ltd., of Manchester, England., as it has their exclusive agency for North America. The company has installed a number of large gas engine plants in the United States and Mexico, including the following: Minas Tecolotes y Anexas, Guggenheim Exploration Co., owners, Santa Barbara, Chihuahua, Mex., capacity 700 h. p.; Moctezuma Copper Co., Phelps, Dodge & Co., owners, Nacosari, Sonora, Mex., capacity 1,000 h. p.; Detroit Copper Mining Co., Phelps, Dodge & Co., owners, Morenci, Ariz., capacity 1,000 h. p.; Winchester Repeating Arms Co., New Haven, Conn., capacity 1,000 h. p. It has recently closed contracts for a number of power plants, among them being the Velardeña Mining & Smelting Co., Velardeña, Durango, Mex. At this plant there will be 2,000 h. p. of gas engines operating from a central power station, an ore concentrating mill, pumps and hoists at six of the mines of this company, the same being variously located within a radius of ten miles.

The concern at Savannah, Mo., which had been doing business for the past two years under the name of the Novelty Stove & Mfg. Co. recently changed to the Howard Stove & Mfg. Co., and increased its capital from $50,000 to $150,000. The company is now erecting a plant at Vermillion, O., to cost about $16,000, and will supply everything east of the Mississippi River from the Eastern plant, and everything west of the Mississippi River from the present plant at Savannah, Mo. The prospect for future business is bright.

TRADE PUBLICATIONS.

Annual catalogue No. 23 of the Garden City Fan Co., of Chicago, has 126 pages and contains descriptions and dimensions of exhausters, pressure blowers, ventilating fans, positive blowers, hot blast apparatus, multiple boring machines, centrifugal mills, etc. A number of important installations are illustrated, as, for example, the Chicago Coliseum, etc.

Several pamphlets and circulars come from the Fort Wayne Electric Works, at Fort Wayne, Ind. The matter of constructing transformers with a maximum insulation, the design of motor starting rheostats, small direct current generators, as well as a line of direct current belted motors, are described with considerable detail.

The Vincent valves made by the Vincent Valve Co., of Sandusky, O., are exploited in a neat booklet. These valves are made in a number of styles and sizes and recently the company has placed on the market a complete line of valves suitable for 250 pounds working pressure and which are tested up to 800 pounds hydraulic pressure.

The Arlington Mfg. Co., of Canton, O., has a series of circulars on metal preservers; one of these treats of the prevention of scale in steam boilers, corrosion and pitting, economy of fuel, causes of explosions, accidents and repairs, and the subject is handled in more detail in a pamphlet on the merits of Arlington compositions for boiler use. The firm also manufactures a coating for blast furnaces, bridges, foundry plants, etc., and it is claimed that locomotive smoke, sulphur, gases, alkalies, nor acids will not disintegrate it. A small circular discusses this coating.

Recent printed matter states that the steel trucks made by the Lyon Metallic Mfg. Co., of Chicago, are manufactured either to the standard adopted by their factory or made to order for any special requirements One of the box trucks, for example, is made for carrying small stampings, castings, machined parts, etc., and is 28x76x26 inches high over all. It is made to stand the anything but gentle treatment of the average shop and is strongly built. The bottom is formed out of No. 14 stock, the sides of No. 18 gauge, and is heavily riveted with triple folds around the upper edges. The casters are designed to withstand rough usage.

The Embree Iron Co. is a new corporation, formed to purchase the property formerly owned by the Embreeville Iron Co., Ltd., and sold to the Virginia Iron, Coal & Coke Co. This corporation is now repairing Embreeville Furnace, Embreeville, Tenn., and enlargements and improvements are to be made in the shape of a new machine shop, additional boilers, and an additional blowing engine. The company expects to go into blast about August 1st, and the product will be foundry and forge irons made from local brown ores, and malleable iron made from Ducktown, Cranberry and local ores. The New York office is at 71 Broadway and the officers are: President, C. P. Perin; vice president, J. L. Elliott; treasurer, T. C. Clarke.

The laborers in the employ of the Industrial Iron Works, Omaha, have filed a petition in the United States District Court asking that the concern be made an involuntary bankrupt. The laborers claim that they have not been paid regularly for about four months and that wages to the extent of $900 are due them.

The Colorado Fuel & Iron Co. has closed a contract with the Spokane Traction Co. and the Spokane & Coeur d'Alene Electric Railway Co. for 3,800 tons of 60-pound rails which will be used on the lines of these two companies in the city of Spokane and between Spokane and Coeur d'Alene City.

COMMISSIONER DU BRUL TO SECRETARY EASLEY.

Commissioner E. F. Du Brul, of the National Metal Trades Association, has addressed the following open letter to Secretary Ralph M. Easley, of the National Civic Federation:

CINCINNATI, May 1, 1903.

Mr. Ralph M. Easley,

Editor *Monthly Review*, National Civic Federation,

281 Fourth Ave., New York City.

Dear Sir: In your issue, Vol. 1, No. 1, of date April, 1903, you make several statements which are not correct and which I trust you will correct by publishing this letter in your next issue.

In the first place you state, regarding the National Association of Manufacturers, that the association endorsed statements made by its president at New Orleans. If you can find any endorsement of anybody's statements in the minutes of that convention, you will do more than the official reporter can do himself, and all of the acts of that convention are on record in the minutes. Whatever may be Mr. Parry's personal opinions, and in whatever manner he may express them, the National Association of Manufacturers is on record with a declaration of principles and some resolutions, none of which are directed against the organization of labor as such. They are directed, and strongly so, against the vicious and lawless element in such organizations.

The National Association of Manufacturers is not an organization of employers as such and of itself does not touch the labor question, excepting as it is affected by legislation. On the other hand, the association by its acts insists that the vicious and lawless element should not be considered the true representatives of the great body of organized labor and, in denouncing the vicious and lawless element, it cannot be considered as an attack on the organization of labor. If you, sir, had investigated the matter more closely, you would surely not have made this mistake. Certainly you cannot believe that the vicious and lawless are an essential part of the organization of labor. Why, therefore, put yourself in the position of seeming to believe it, by taking as gospel truth the garbled press reports of a convention representing 2,000 patriotic manufacturers, who specifically went on record in these particulars?

Regarding the Employers' Association, of Dayton, and kindred organizations: here again, whatever may be the personal opinions of the president of that organization, you are wrong in assuming that it was organized for the specific purpose of smashing unions. If you will take the slight trouble to read the constitution of that organization, you will see just why it was brought into being.

Now, regarding the National Metal Trades Association, of which I have the honor to be commissioner, I beg to deny your statement that this organization is more or less hostile to the organization of labor. This organization is absolutely hostile to illegal acts, whether performed by workmen or employers, organized or unorganized. Because we do not choose to make agreements with certain unions, you seem to consider us hostile to their existence.

We had an experience that has made us chary of the present management of the Machinists' Union. Perhaps we are wrong in our position in this regard, but in a number of cases of recent date, in attempting to deal with the Machinists' Union in various localities, we have found that it was impossible to do business with them. At this writing, in Rochester, N. Y., there is a strike on in a member's shop; a strike that seems to have been voted against the wishes of the employes of that shop by the employes of other shops. The strike is an effort to compel the company to abolish the premium system, and so reduce the earnings of their men. The premium system has been in operation for two years, to the great satisfaction not only of the company, but also of its employes. In that case, the official representatives of the Machinists' Union of Rochester absolutely refused to submit the matters in dispute to a disinterested board of conciliation.

In Quincy, Ill., there is another case of the Machinists' Union refusing to submit a demand to a board of conciliation. This demand was for the reinstatement of a man who personally has never asked to go back to work in the shop in which he formerly worked, and which he left under circumstances that made it impossible for the employer to calculate as to how long the man would be absent.

In Elmira, N. Y., the machinists have demanded the abolition of the premium system in the Payne Co.'s shop, and their representative, not reasoning at all, not arguing the question, not claiming any injustice, simply flatly stood on the proposition that the premium system would not be tolerated by that union.

In Milwaukee, Wis., there is a strike on to compel the reinstatement of a foreman who was discharged for unsatisfactory service.

On the other hand, conferences are now going on in Pittsburg, St. Louis and Chicago without strikes, which, it is hoped and believed, will result in amicable and equitable settlements.

All of the above strikes have been endorsed by the grand lodge of the Machinists' Union, under misapprehension of the facts, perhaps, but nevertheless they are endorsed.

These things, my dear Mr. Easley, are not theories, but they are facts; and the natural feeling among the members of the National Metal Trades Association is that, until we have evidence that the management of the Machinists' Union shows itself by its acts to be such as the members of this association can place confidence in, we had better not have another national agreement. On the other hand, this association is definitely on record as permitting agreements between its members and their employes, collectively, whenever the members feel that the collective management of their employes' affairs is business-like and reasonable.

Now, referring to our periodical: It has been my aim and intention in publishing our monthly *Bulletin* not to devote it to attacks on organized labor, but to devote it to denouncements of the evils that are now so prevalent with organized labor and which I firmly believe can be removed only by an awakening of public sentiment. If you had read our *Bulletin* as carefully as I shall read your publication, you would see in every number articles dealing with the problems of conciliation and arbitration. In the very first number, July, 1902, there was an exposition of the satisfactory settlement of machinist matters in St. Louis last year.

In the August number was reprinted an address delivered before the National Civic Federation at Chicago in December, 1900, by Mr. Frederick P. Bagley, on the subject of the organization of employers as a prerequisite to concillation and arbitration, and also a copy of a proposed agreement between the Stove Founders' Association and the Polishers' Union; also a copy of the Pittsburg machinists' agreement and an account of arbitration in the Moran Ship Yards, Seattle.

In the September number was a paper by one of our members, a discussion of arbitration with an old arbitrator.

In the October number was a reprint of an article by Prof. George Gunton on the foolishness of attempts at the suppression of trade unions and a reprint of your own description of the National Civic Federation and its work; also an account of the New York blacksmiths' strike of last August, in which the Civic Federation was of great assistance in bringing about a peaceable settlement by arbitration.

In the November number was a reprint of Mr. Herman Justi's address before the National Civic Federation at Chicago on Dec. 17, 1900, on the organization of employers as a prerequisite to conciliation and arbitration.

In the December number was a reprint of Mr. Justi's lecture on the organization of capital, delivered in Boston on Nov. 20, 1902, and a discussion of the acceptance of the premium plan in England by the Amalgamated Society of Engineers.

In the January number, of this year, appears Dr. Hillis' sermon, "Labor's War on Labor," and an article from the *Union Chronicle*, of Cincinnati, and an article from the *Nineteenth Century Review* on "Industrial Troubles of America;" also an article arguing for a better kind of organization of labor than some of the unions have at present.

In the February number we reprinted an address delivered by Mr. William H. Sayward, urging conciliation in the building trades, and also some commendatory editorials on "Organization of Employers," as suggested by Mr. Justi's Boston speech.

In the March number we reprinted some more editorials

along the above lines, and Mr. W. H. Pfahler's address before the Americal Association of Political and Social Science, on the "Co-operation of Labor and Capital."

In the April number we reprinted Mr. Pfahler's address before the American Economic Association, on "Free Shops for Free Workmen," and also a letter of Mr. Goldwin Smith, one of the men to whom the unions owe so much in England for the repeal of the old combination laws.

Now, if the printing of articles of that sort, together with other articles that condemned the vicious practices of some unionists, are attacks on organized labor, I suppose that we are guilty.

I believe, with you, that "there is a common ground where employer and employe can meet with satisfaction and honor to each," and wherever, in my work as commissioner of this association, I find that a union involved with us is willing to deal fairly, I recommend as strongly as lies within my power that the employes be met more than half way. In Cincinnati prominent members of the National Metal Trades Association, imbued with the idea of fair dealing and conciliation, after having fought through a bitter strike two years ago, which would never have occurred had the machinists' officials in this city and elsewhere not brought it about, have voluntarily and unasked consummated a reduction in the working time of the shops of the members here to fifty-five hours per week, with no reduction in pay.

In Cincinnati, and in other places, the local secretaries act very largely in the capacity of joint "Social Secretaries" for members, listening to complaints of the workmen, hearing their grievances and seeing to it that abuses unsuspected by the employers are corrected.

I want to assure you, sir, that the membership of the National Metal Trades Association aims to deal fairly and justly by all of its employes, whether organized or unorganized. In this way we differ from others, but we take it that the Coal Strike Commission is, so far, the highest authority in these matters and we accept their good American dictum that "no discrimination shall be made against any employe because of his membership, or non-membership, in a labor organization," and we stand ready to enforce in our shops their further dictum that "no employe shall be discriminated against by the members of a labor organization because of his non-membership in such organization." If this is hostility to the organization of labor, then this association is not as hostile to organized labor as that commission, for we can never use language as strong as that commission's report.

Even during the heat of the general machinists' strike of two years ago, when we adopted our present declaration of principles (every one of which has since been practically sustained in the coal strike report), this organization there went on record as favoring conciliation between employers and employes in the following words: "In cases of disagreement concerning matters not covered by the foregoing declaration, we advise our members to meet their employes either individually or collectively, and endeavor to adjust the difficulties on a fair and equitable basis. In case of inability to reach a satisfactory adjustment, we advise that they submit the question to arbitration by a board composed of six persons, three to be chosen by the employer and three to be chosen by the employe or employes. In order to receive the benefits of the arbitration, the employe, or employes, must continue in service and under the orders of the employer, pending a decision. In case any member refuses to comply with this recommendation, he shall be denied the support of this association until it shall approve the action of said member." I wish to say further that in no case has a member received support in which he did not endeavor to adjust his difficulties as above.

In this connection, I beg to call your attention to the fact that Mr. W. H. Pfahler, one of the most earnest friends of organized labor and a member of your National board, is a valued and active honorary member of our administrative council; that Mr. Charles A. Moore, of New York City, a member of this association, is on your National committee and also on your New York committee; that Mr. Walter L. Pierce, a member of the New York Civic Federation, is a former president of this association, and one of his associates in business, Mr. H. N. Covell, of the Lidgerwood Mfg. Co., is now our first vice president. Furthermore, I beg you to remember that the New York Metal Trades Association, an offshoot of this body, by and with the consent, knowledge, approval and suggestion of this association, was eminently successful in co-operation with you in several cases affecting our members in New York, bringing about peaceable and equitable adjustments. In this particular see the item quoted on the last page of your very first *Review*, headed "Ship Yards Strike Ends."

Now, Mr. Easley, do you think it fair to confound our hostility to illegal and unjust acts, with hostility to the principle of organization, a principle which we ourselves are daily preaching to the employers?

I trust that this letter has not infringed too largely on your space, but I feel that the matter is of sufficient importance to demand full explanation, in order to put the National Metal Trades Association correctly before your readers.

We hardly dare hope to be understood by radical unionists, but to have you misrepresent our aims in such an off-hand, self-confident way, a way liable to stir up hard feelings rather than allay them, is entirely too much. I remain, sir,

Yours respectfully,

E. F. Du Brul,

Commissioner National Metal Trades Association.

The Corbin Screw Corporation, which has been formed to take over the screw business of the American Hardware Corporation, which is now conducted by P. & F. Corbin and Russell & Erwin Mfg. Co. separately, has elected the following board of directors: P. Corbin, A. Corbin, Chas. M. Jarvis, Chas. H. Parsons, Chas. Glover, of P. & F. Corbin; H. S. Hart, Theo. E. Smith, Benjamin A. Hawley, Clarence A. Earl, of Russell & Erwin Mfg. Co. The following officers were elected: President, Charles Glover; vice president, Clarence A. Earl; secretary and treasurer, Theodore E. Smith; assistant secretary, William J. Surre. The capital stock of the Corbin Screw Corporation is placed at $400,000. The three factories acquired employ at the present time about 1,500 men, and 400 of these are at Dayton, O., the remainder about equally divided between the two departments at New Britain, Conn. It is the intention of the management of the Corbin Screw Corporation to gradually consolidate the two plants at New Britain on property now owned by Russell & Erwin Mfg. Co. The Corbin Screw Corporation will take over the various properties about July 1, and will at that time commence business as a separate corporation, and, although incorporated, the officials elected will not act as a corporation before that time.

Herr Moeller, the Prussian minister of commerce, speaking before the Madgeburg chamber of commerce May 5, asserted that Germany needs greater concentration as being the only efficient weapon left with which to meet American competition. He added: "The nation that does not follow the tendency of the times toward concentration of industries will be left behind. We cannot hold our own in the world's markets without specialization and concentration. One of Mr. Morgan's associates said to me some time ago that the distrust which the United States Steel Corporation caused was not justified. They were not such simpletons as to try to take advantage of the consumers, although they were able to do so. Their objects were a division of labor territorially, to produce only where production was the cheapest and to get rid of the middleman. The struggle against the middleman will continue with us as in the United States.

W. L. Grace, of St. Louis, acting for himself and others, has leased the blast furnace in the State penitentiary at Rusk, Texas, for thirty days in order to make experiments with iron ore found in Cherokee County, Tex. Mr. Grace has secured options on two old furnaces near New Birmingham, Tex., and if the tests now being made at Rusk prove satisfactory, one or both of the furnaces will be purchased and put in operation.

The Pennsylvania Railroad Co. has placed another order with the American Car & Foundry Co. for 2,200 new steel cars for the use of its lines west of Pittsburg.

THE GOSLING DUPLEX TRACK DRILL.

The Gosling duplex track drill is a machine invented by H. J. Gosling, of Cleveland, for drilling rails in position. The combination consists of the drilling machine, the motive power equipment and a suitable car. The latter is made up of steel

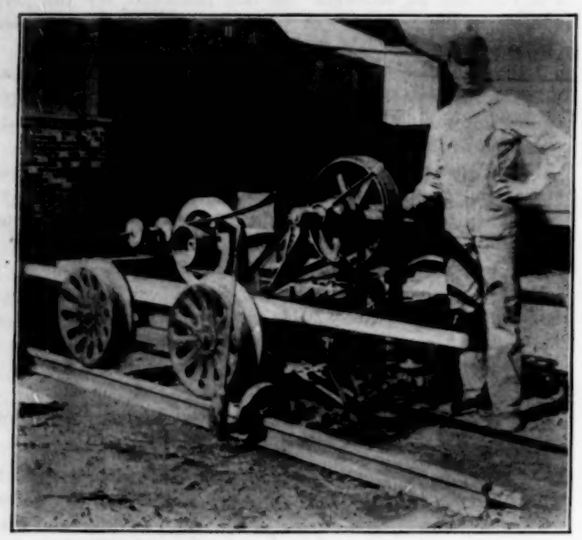


FIG. 1.—THE GOSLING DUPLEX TRACK DRILL.

sections and is very light and at the same time rigid. Oak handles extend at each end for the purpose of lifting or otherwise handling the car. Fig. 1 shows the machine in position on the track and Fig. 2 is a view of the rear end of the car with the drilling mechanism in line with the rails, the upper

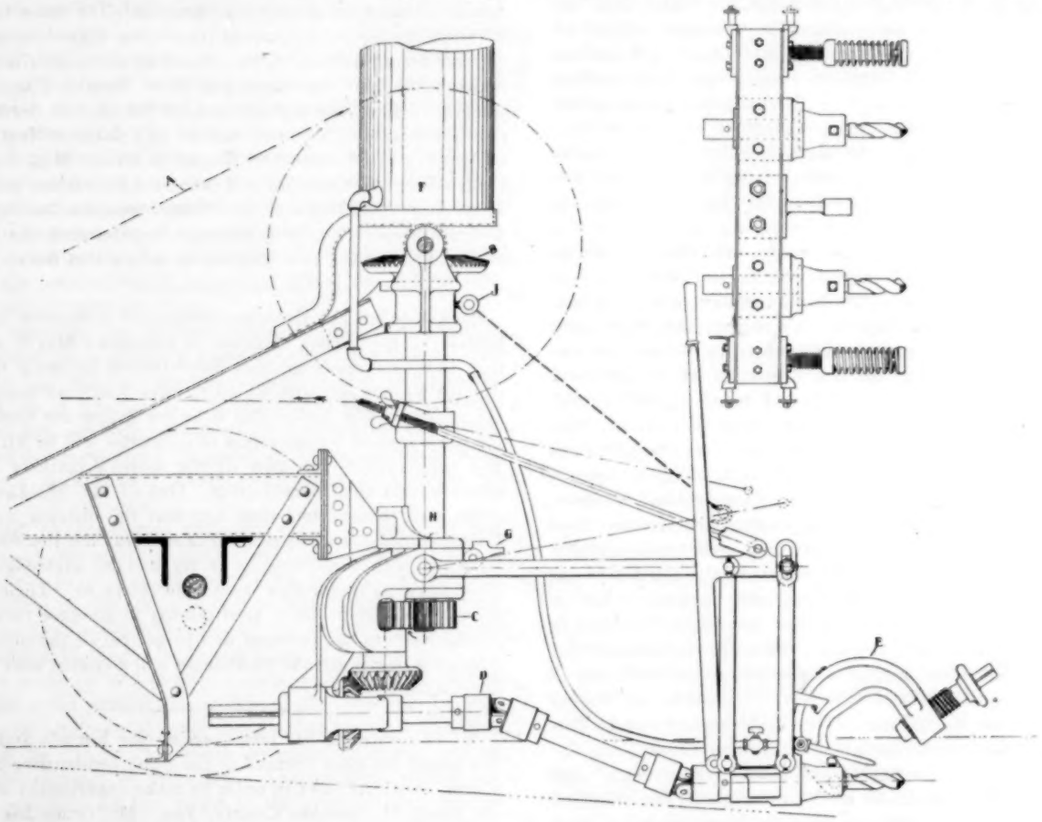


FIG. 2.—REAR END OF CAR. DRILLS PARALLEL WITH RAILS.

right hand corner of Fig. 2 illustrating the plan of drill beam.

The drilling mechanism is attached to the read end of the car and the motor, a 6-horsepower gasoline engine, is secured to the frame at the forward end. The guard shown at the left of Fig. 1 (projecting downward near the wheel) serves a double purpose, the protection of the gears from loose obstacles on the track as well as serving as a pivot. The center of gravity of the machine falls about that point and the support provides a convenient adjunct in speedily getting the car off the track. This operation may be briefly described as follows: A block of wood about 4 inches square is placed on the tie in close proximity to the guard, two men can lift the rear end of the car and move it until the guard will fall on the block as the machine is lowered. It is then an easy matter to lift the forward end of the car clear of the rails and swing the machine round clear of the track and then, by lifting the rear end, wheel the car onto a pair of boards if the ground is soft, and thence out of the way.

The engraving in Fig. 2 shows the details of the mechanism; the power being taken from the 6-horsepower engine by a belt A, which runs on a 20-inch pressed steel pulley and is connected with an Orton friction clutch. The belt pulley is attached to a short shaft and by means of a bevel gear drives the gear B fastened to the top of an upright shaft which has at the other end a pinion C. This pinion C meshes with another spur gear mounted in the swinging frame and by bevel gear connections, and universal couplings, as at D, is employed for the driving of the drills. A C-clamp E is pivoted to the center of the drilling beam and fits over the head of the rail.

The operation of the appliance is as follows: The machine being brought opposite the joint, the radial arms are swung round square with the machine and locked in place with the latch, the latch G then being brought into position so that it may be inserted into the recess H in Fig. 2. The C-clamp E is dropped over the head of the rail, and the clamp having a purchase against the web of the rail, pulls the drills through the metal, the lever on clamp screw being shown in position in Fig. 1. This pulling action is rather a novelty, the inventor pointing out that by means of this design the strains are contained between the rail and the drill beam, and the universal joints have only the torque to control; the springs at either end of the drill beam equalize the drilling, hold the drills back at the instant of penetration, and having only a short distance to travel (sufficient to enable the drill to clear the metal), should the one drill cut faster than the other, the spring spindle

will form a fulcrum until the other hole is completed. It is evident anyway that a single hole can be drilled at a time by taking out the one drill and screwing out the adjacent spring spindle a few turns. The upright hand lever is used for withdrawing the drills when the holes are completed, the radial arms, stays and C-clamp being then hooked up with a chain attached at J on the center post. There is a tank at F which supplies soda water through a flexible tube to the drills.

The rear axle boxes have a vertical movement which is controlled by cam levers. This arrangement enables the mechanism to be raised clear of road crossings or other obstructions that do not exceed an inch over head of rail level. The ordinary level is indicated by the upper dotted line, but the lower dotted line shows the relation of the mechanism to the rails when the frame is lifted on the rear axle by means of levers not shown in the elevation.

The universal joints are said to wear well, but they may be wrapped to advantage with canvas to keep out sand, etc., as they are so near to the ground.

The motor adopted is a 6-horsepower horizontal gasoline engine running at 500 revolutions per minute, and this speed gives 95 revolutions per minute to the drills. The drills as a rule are ⅞ inch in diameter for 75-pound rails and 1 inch for 80-pound rails. The motor runs continuously whilst the drills are put in motion as needed by means of a friction clutch.

It will be understood that the drills can be swung to either side of the track and this enables the work to be systematically completed as the machine moves ahead. The inventor has made a number of tests in regard to the economy of drilling in this manner as compared with the more common methods, and asserts that one man with the machine as illustrated and with the aid of one helper has accomplished 450 holes in 10 hours, and that on test occasion 60 holes have been drilled in one hour, the machine being shifted 15 feet for each pair of holes. The car is equipped with a work bench and tool box, vise and drill grinder on the forward end. The drilling attachment is found to be very flexible in all directions and readily adapts itself to all sorts and conditions of track and these are evidently far from uniform in work of this kind. It is rather strange that there should be so much hand work still under way in track laying. The cutting of a deep section of a heavy rail for street car traffic is not infrequently done with a small amount of hacksaw and a large amount of muscular exertion while overhead is often an ample supply of power waiting for a chance to do the work. The present machine is one effort in the line of greater convenience in track work and has also certain peculiarities of general interest in the adaptation of means to ends.

Mr. Schwab's Visit to Bethlehem.

President Schwab, of the United States Steel Corporation, when asked a few days ago about his visit to the plant of the Bethlehem Steel Co., a subsidiary concern to the United States Shipbuilding Co., said:

"The shipbuilding company's officials were considering the advisability of making extensive improvements, and because I was familiar with the Bethlehem plant they asked my advice. Some engineers who had built the Homestead plant were in New York, and as the shipbuilding company was contemplating some improvements similar to those at Homestead I asked them to go along with me. So I telegraphed Mr. Nixon and we all went along."

When asked whether any means had been devised for raising $3,000,000 or $4,000,000 for the Bethlehem Steel Co., Mr. Schwab said: "I don't know. I am not a director nor an official of the company. I am only interested as a security-holder in the United States Shipbuilding Co. I sold the Bethlehem Steel Co. to the shipbuilding company and took stock and bonds."

The Sharon Foundry Co., with office and works at Wheatland, Pa., has issued an announcement of the erection of its foundry and machine shop for the manufacture of castings of all kinds—from five pounds to thirty tons. The company announces that its specialty is blast furnace and steel works castings.

ROLLING TUBES WITH LONGITUDINAL RIBS.

Several methods of rolling metal tubes having longitudinal ribs are described in a recent patent granted to M. Mannesmann, of 76 Avenue Victor Hugo, Paris. When a tube blank is rolled between rolls having rims, for example, as shown at Fig. 1, the compression exerted by the rolls in the central plane upon the work not only reduces the thickness of wall of the tube, but also causes a portion of the material to flow, as shown by the arrows into the spaces between the rims A_2 of the rolls A. This action, which takes place in a similar manner when three or more co-operating rolls are employed, entails the formation of the longitudinal bulges or ribs B_1 on the tube B. The process for limiting this rib formation to a determined extent consists merely in preventing the lateral flow of the material wholly or partly, or in rendering this flow more difficult, which can be effected most conveniently by the shaping of the rims of the ribs. Obviously the least resistance is offered to the lateral flow of the material, in reference to Fig. 1, when the rims A diverge outwardly, or when the parallel rims are made smooth, but if the rims A_2 are formed with furrows, as at Fig. 2, then these furrows offer a great resistance to the flowing of the material. As the work, especially at its entrance, moves between the rolls more slowly than the rolls revolve, i. e., lags behind the rolls, the furrows of the roll-rims, by reason of their obliqueness, force inwards the material which is seized by them, and which is forming the ribs, i. e., they diminish to a certain extent the formation of the ribs.

The furrowed or very rough rims A_2 of the rolls, may, as shown in Fig. 2, be provided with projecting flanges A_3, which overlap the rims of the other roll and thus entirely enclose those spaces which cause the formation of ribs. The material

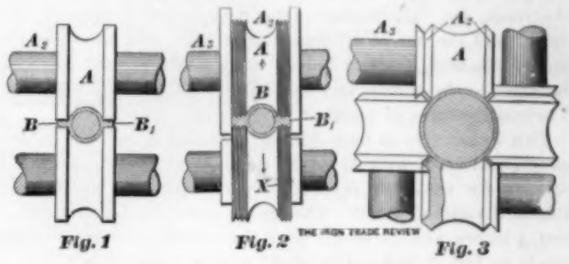


Fig. 1 Fig. 2 Fig. 3

ROLLING TUBES WITH LONGITUDINAL RIBS.

which enters laterally into the spaces between the roll-rims is necessarily stopped at these flanges A_3. They are particularly suitable in those cases in which it is required to produce rib-tubes, i. e., in cases where it is desired that the ribs should remain on the tubes. Fig. 3 shows a rolling mill of this kind with four rolls. Each roll A has on the side a flange A_3, and on the other side a suitable hollow to receive the corresponding flange of the adjacent roll.

The Columbus Wire & Iron Works, Columbus, O., has been merged in The Columbus Wire & Iron Works Co., with a capital stock of $30,000. Frank H. Howe, formerly of the firm of Southcomb & Howe, is president and treasurer; C. E. Richards, vice president; H. B. Gatch, secretary, and J. L. Southcomb, superintendent. The company has taken over the buildings and plant of the firm of Southcomb & Howe and proposes to largely increase the output, which consists of elevator enclosures and cars, bank and office railings, window guards, settees, and other plain and ornamental wire work. The business to which the company succeeds has been established for seventeen years. It is not the intention to erect any new buildings at present, as the two buildings now occupied are sufficient for present purposes, but these occupy only one-third of the land the company owns, which is provided with a private railroad switch, and it is expected that other buildings will soon be required.

The report for lake commerce through the canals at Sault Ste. Marie for April shows that the following passed through: Eastbound, iron ore, 698,437 net tons; pig iron, 40 net tons; westbound, manufactured iron, 3,231 net tons.

20-TON ELECTRIC STORAGE BATTERY LOCOMOTIVE.

An electric storage battery locomotive has been designed with special reference to the economical handling of material in mills or other manufacturing establishments. It frequently happens that a single car load of raw material has to be distributed at various parts of the works, and in such cases much costly rehandling can be saved by shifting the entire car from point to point, and discharging each portion of the load exactly where it is required. A similar economy can be effected by collecting the finished product at the different buildings, and loading each consignment directly into its proper car. The locomotive in question is used for shifting cars while loading or unloading in this manner, and also for transferring material in course of construction from one shop to another.

The operating expenses consist of the cost of power required to charge the batteries, and the pay of one man. Even if the charging current is supplied from an independent steam driven generator there is no waste of energy when the machine is not in operation. A steam locomotive requires a licensed engineer and an assistant to operate it, and increases the fire risk. A further advantage of the storage battery locomotive is that it can be run on any track or switch without the expense of a trolley wire.

A locomotive of this type has recently been installed at the works of the Massachusetts Cotton Mills in Lowell, Mass. Before installing the locomotive, the cars were shifted, one at a time, by three horses harnessed up tandem. The storeroom is so constructed that the horses would have no means of exit if driven in ahead of the car, and this necessitated sending it in "on the fly." The bridge is just wide enough for the car tracks, and the horses had to turn out before reaching it. To get up speed, it was necessary to start some distance up the track, the "tag holder" (the man at the coupling), the driver and the horses all traveling at their best gait. At the proper moment, the tag holder unhooked the "tag" or rope fastened to the traces, and ran out from in front of the car. The consequences of a slip or false step are self-evident.

This locomotive is built for the standard 4 feet, 8½ inches gauge, and fitted with M. C. B. standard couplings, making it suitable for use with any ordinary railroad car, and on any standard railroad track. The length over the bumpers is 21 feet, 4 inches, and the height from the railhead to the top of the cab is 12 feet, 1 inch. The wheel base is 7 feet, 6 inches, and permits the operation of the locomotive over a comparatively smaller turntable. It weighs about 20 tons, and runs at a speed of from two to four miles per hour on level track. The locomotive is perfectly "double ended," the cab being located directly in the center. This makes a very desirable arrangement for switching work, which calls for operation in both directions with equal facility. The batteries are contained in the sloping compartments at either end. This symmetrical disposition distributes the weight evenly on the four wheels, and, as each of these is a driver, the entire weight of the locomotive is usefully employed in traction. The wheels and axles are driven from the gear cases in the cab by means of Renold silent chains suitably enclosed. These chains are the only portion of the driving gear situated below the car body, the motors and gear cases being mounted in the cab where they are readily accessible, and always under the immediate notice of the operator. This is considered a most important feature of the design, as it is a matter of common experience that any inaccessible piece of mechanism will be run with no attention until it finally refuses to operate. When such a condition is reached a complete shutdown is necessary to enable more or less costly repairs to be made by an expert electrician or mechanic.

The battery was furnished by the Electric Storage Battery Co., the elements being mounted in tanks of extra depth to prevent the electrolyte from splashing over the top. In mounting the battery special attention has been paid to protecting it against injury due to the shocks to which the locomotive is exposed in switching. There are two motors specially wound for the service. By connecting the two motors in series or parallel, and by varying the arrangement of the fields, an efficient speed control is obtained without wasting the energy of the battery by passage through resistance. The controller is of the standard vehicle type, and has two levers which control every desired motion of the locomotive. The reversing lever is pointed in the direction in which the locomotive is to move, and the second lever controls the speed. These levers are mechanically interlocked, as in the case of a trolley car controller so that the motors can only be reversed when the speed lever is in the off position. The locomotive may be run with the controller in any notch, there being no transition point on which a careless operator might leave his lever and burn out the apparatus.

As already mentioned, the speed-reducing gearing is located in the cab, instead of being beneath the car body. All the gears are machine cut, and run in a bath of oil, in fully enclosed gear cases of the C. W. Hunt Co.'s standard type. The same company's regular flexible and insulated coupling is used for connecting the motor to the gear case. There is a separate gear case for each of the two motors. It will be seen that the driving gear consists of two parts which are exact duplicates of each other. In an emergency, one motor could be cut out entirely, and the locomotive operated by the remaining motor, but with a reduction of hauling capacity.

The speed reduction of the gear case is so proportioned to the safe discharge rate of the batteries, the safe capacity of the motor, and to the weight of the locomotive, that neither the batteries nor the motors can be dangerously overloaded. The driving axles are made to the M. C. B. standard dimensions, and run in "Hunt" patent roller bearings, which reduce the friction at these points to an inappreciable amount. The wheels are shrunk in place, and have chilled treads and flanges of M. C. B. standard size and shape. A powerful brake is conveniently located in the cab. An alarm gong is also provided. Experience has shown that in light switching service, the batteries can be recharged at various times during the day while the locomotive is waiting between hauls. For heavier service, it may be necessary to charge during the noon hour or after working hours in the evening. The battery is automatically protected during charging by well known safety appliances which open the circuit if the current is excessive, and also when it drops so low as to indicate that the battery is fully charged. The precise arrangement of the charging station depends very largely on the details of the electric plant available, and the builders of the locomotive are glad to advise their customers as to the methods to be employed in each particular case.

This locomotive is placed on the market by the C. W. Hunt Co., of West New Brighton, Staten Island, N. Y. Smaller locomotives intended for use on the Hunt narrow-gauge track have been built by the same company for a number of years.

William N. Nisbet, formerly superintendent of motive power of the Queensland Government Railways, is now at the Holland House, New York. He has established himself in Sydney, New South Wales, with a view to handling American machinery, etc. He expects to place some substantial contracts while in this country.

The Jenckes Machine Co., Sherbrooke, Que., has applied to Parliament for power to increase its capital stock to $1,000,000 in order to enlarge the plant. It has not been determined definitely where the new plant will be erected, in Sherbrooke or at some other point in Ontario. A number of Canadian cities are holding out inducements to the company, and Sherbrooke is making a determined effort to prevent the company from moving its plant elsewhere.

The Pope Mfg. Co. has filed with the Secretary of State of New Jersey, amended articles of incorporation increasing the authorized capital stock from $22,000,000 to $22,500,000. The increase in capital is for the purpose of taking over the business of the American Bicycle Co. which has been in the hands of a receiver for some time.

The Champion Safety Lock Co., Geneva, O., which recently increased its capital from $30,000 to $50,000, expects to get out a new line of goods and to largely increase its business by additions to the present line.

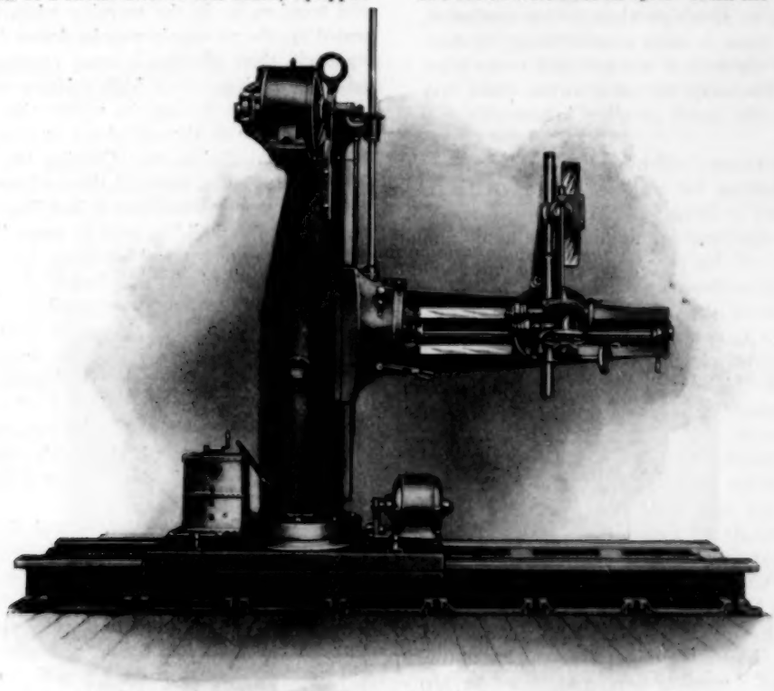
PORTABLE RADIAL DRILL.

A portable and universal radial drill has been recently built by the Western Machine Tool Co., of Holland, Mich., and installed at the West Allis plant of the Allis-Chalmers Co. This tool is mounted on a long bed and the lateral motion is controlled by a Bullock 3-horsepower constant speed motor mounted on its own base, as shown, and the column may be secured at any point by clamping bolts.

The machine can be picked up by a traveling crane, a suitable eyebolt is placed at the top of the arm for this purpose, and located alongside a heavy engine casting. This casting may be fastened to a floor plate, to which the base of the portable radial drill can also be secured by means of the T-slots shown in the illustration. Several machines can be in operation on the same casting at once, saving much time and a large amount of heavy handling.

The machine illustrated has a travel of 12 feet on its own bed and a reach of 6 feet, thus giving the tool a large range at each setting. The main drive is from a 6-horsepower Bullock variable speed motor mounted on the top of the column and handled from the controller seen on the side of the machine. This machine was supplied by Hill, Clarke & Co., of Chicago.

A detailed description of a radial drill of this make, equipped with a Reeves countershaft, the machine not being of a portable character, appeared in *The Iron Trade Review* for Oct. 30, 1902. That account covered many points of interest, particularly the means employed to secure stiffness. The column is double clear to the top and some drilling tests show remarkable results, the amount of deflection being very small. A 2 7-16-inch drill in steel (leading hole ¼ inch) spindle in center of arm and feeding down one inch to every 80 turns of the spindle, the total deflection at the end of the arm being .037 inch.



PORTABLE RADIAL DRILL.

C. K. Davis, Wellston, O., has sold 3,000 acres of the Eagle furnace lands in Vinton county, O., to B. B. Lathbury, of Philadelphia, and New York capitalists, who will begin immediately the erection of a large cement plant in Wellston on the site of the old Alma mill, which burned a few years ago, also the erection of a mill on the Eagle furnace lands. The Wellston mill will have a capacity of 1,500 barrels of cement per day, and the mill on the Eagle furnace lands a capacity of 3,000 barrels per day. The concern will be known as the Alma Cement Co.

WIRE ROD AND WIRE NAIL PRODUCTION IN 1902.

The American Iron and Steel Association has collected the statistics of production of wire rods and of wire nails in the United States in 1902. The production of iron and steel wire rods in 1902 amounted to 1,574,393 gross tons, against 1,365,934 tons in 1901, 846,291 tons in 1900, 1,036,398 tons in 1899, and 1,071,683 tons in 1898, showing an increase of 208,459 tons, or over 15 percent, in 1902, as compared with 1901, and an increase of 86 percent over 1900. Of the total production in 1902, 1,574,187 tons were steel and 206 tons were iron rods. The following table gives the productions by States in the last three years, in gross tons:

States—Gross tons.	1900.	1901.	1902.
Mass., Conn., R. I., N. Y., and N. J.	134,502	176,101	201,653
Pennsylvania	240,533	386,037	509,802
W. Va., Ky., Ala., and Ohio	244,731	422,679	440,558
Indiana and Illinois	226,525	381,117	422,380
Total	846,291	1,365,934	1,574,393

Pennsylvania made the largest quantity of wire rods in 1902, with Illinois second, Ohio third, and Massachusetts fourth. Eight other States, Rhode Island, Connecticut, New York, New Jersey, West Virginia, Kentucky, Alabama, and Indiana, also rolled wire rods in 1902. With the exception of West Virginia, which first rolled rods in 1902, all the States named also produced rods in 1901.

The production of wire nails in the United States in 1902 amounted to 10,982,246 kegs of 100 pounds, as compared with 9,803,822 kegs in 1901, an increase of 1,178,424 kegs, or over 12 percent. In 1900 the production amounted to 7,233,979 kegs, in 1899 to 7,618,130 kegs, in 1898 to 7,418,475 kegs, in 1897 to 8,997,245 kegs, in 1896 to 4,719,860 kegs, and in 1895 to 5,841,403 kegs. The wire nails produced in 1902 were made by 62 works, as compared with 61 in 1901. The production in 1902 was greatly in excess of that of any preceding year. Almost all the wire nails produced in 1902 were made of steel.

The following table gives the production of wire nails in 1901 and 1902, in kegs of 100 pounds:

States—Kegs of 100 pounds.	1901.	1902.
N. H., Mass., R. I., and Conn.	71,553	309,651
New York	136,118	132,854
Pennsylvania	3,118,508	4,219,604
Md., W. Va., Ky., Ala., and Ohio	3,633,894	3,251,918
Indiana and Illinois	2,716,748	2,902,006
Mich., Wisconsin, and California	127,001	166,213
Total	9,803,822	10,982,246

HEATING AND VENTILATING OF SHOPS.

At a recent meeting of the New York Railway Club an interesting discussion took place upon the subject of heating railway shops and other one-story buildings of the same nature. While such buildings are very simple in construction, distributing heat and air is not so simple. On account of the large amount of roof, wall and window surface, the loss of heat is great, and also because of this and the relatively great height of the building, considered as a single room, there is a tendency toward unequal distribution of the heat, the warm air rising to the roof and the cold air flowing to the floor, where it renders the workmen uncomfortable. It is important, then, not only that a sufficient quantity of heat should be delivered to the building, but also that it should be delivered where it will do the most good.

If an attempt is made to supply the heat directly by means of steam or hot water coils the best results are not obtained. The vicinity of the coils is apt to be uncomfortably hot from the heat radiated directly therefrom, while places at a distance are disagreeably cold. The heat transmitted to the air of the room by contact and convection from the coils is largely lost, since the hot air rises vertically and imparts its warmth to the roof and skylights. It is also to be objected to this system of heating, that it makes no provision whatever for ventilation, the extended system of steam or water pipes is subject to damage by freezing during the coldest weather and steam pipes have been shown to be frequently the cause of fire where they came in direct contact with wood or other inflammable materials.

Due principally to the reasons which have been given above, the direct system of heating for work of this character is falling into disfavor and is being superseded by the fan or hot-blast system. The apparatus required for the latter consists usually of a steam coil for heating the air, an engine or motor-driven fan for propelling the air through the heater and to its destination in the shop, and a system of piping or ducts leading it where it is needed. The heater will contain a considerable less length of pipe than would be required for direct heating, due to the higher velocity of the air over the pipe surfaces. The blower is additional equipment, but its use would be justified on the score of ventilation alone, something which is hardly considered at all in the direct system of heating. The exhaust of the engine is usually turned into the heater, thus obviating any loss from that source.

The distribution of the air by means of pipes should be so carried out that the lower part of the room is kept at a comfortable temperature, while at the same time no disagreeable drafts are produced. It has been found that by properly proportioning and directing the delivery flues most satisfactory results can be secured. Illustrating this point some interesting examples were cited at the meeting mentioned above, by Mr. C. H. Gifford, of the B. F. Sturtevant Co. He said in part:

"In the first place, if you desire air or almost any other form of gas or substance at any particular place at any particular time, the best way is to provide a suitable conduit to deliver it there, and if there is any difficulty from air blowing on an individual workman, it is a simple mechanical detail to rectify it and, if you are unable to predetermine where the men or machines are to be located in a building, you can simply have an adjustable discharge opening from the pipe delivering the air, and if it blows upon some one there generally is some space near the person to which the air can be directed and therefore cause no inconvenience whatever.

"As an example of what can be accomplished by distribution, I have in mind the machine shop of the New York Shipbuilding Co. They have a building which I believe is about 1,100 feet long, about 250 feet wide and 82 feet high. The proposition was to heat one-half of this building and leave the balance of it unheated. We conceived the idea that there could be a partition put across the middle of the building about 12 feet high, and we could then bring the heated air down to the zone which it was desired to heat, which was not over 8 feet above the floor, and in that way we could perhaps confine the air in the space, and not have very much effect on the rest of the building. It was something of a speculation and rather a bold attempt, when you consider entering into a guarantee which might involve a serious loss; nevertheless it was done.

"The apparatus is arranged under the landing platforms of the gallery which surrounds the shop, so that it is out of the way of the cranes. Pipes are carried along beneath the runway of the cranes and branches are brought down on the posts and discharge the air towards the floor, the outlet being in the form of a Y, which is adjustable. We were very much gratified after the plant was started to find that it performed just as was expected it would, and it is surprising to note the difference in temperature between the two sides of that partition. It is almost the same as when you pass from the building out of doors. The result is simply due to the fact that the air was brought down and continually pressed down into the space which it was desired to heat." Emphasizing the advantages of correct distribution Mr. Gifford said that it is "possible in some cases to introduce $50 worth of additional pipe to carry the air where it is most needed, so that you can, on account of this, leave out $100 worth of heating apparatus. That is, you can get equal results by using smaller apparatus and less steam.

The adoption of the fan system renders the control of the heating apparatus and of the ventilation ideal. During very cold weather, or in the morning when the building is being heated up, the air supply may be drawn from within the building itself, thus effecting a great economy of heat. In some buildings having a very high cubic space per occupant, sufficient ventilation during the winter time will be supplied by the leakage of air through doors and crevices about the windows, by transfusion, etc. Quoting Mr. E. T. Child, also of the Sturtevant Co., some of these advantages are as follows:

"First, a great convenience in handling, since the entire heating system of a building may be controlled from one point.

"Second, efficiency and economy, by controlling the speed of the fan and reducing the length of pipe to which steam is supplied, leaving more steam available for other purposes.

"Third, the fact that the entire heater coil is in a steel housing makes the danger from fire much less than with many pipes passing through partitions of wood.

"Fourth, in the summer time it gives the opportunity to ventilate the shops. This is quite important. Some shops are very apt to become over-heated in the summer time and a current of cold air may be drawn from a basement, making them much more habitable.

"The pipes should be so arranged that the air will not be discharged directly upon the workmen; it is also true that hot air will do the most good if it is put where it is needed. If the space around the walls of a building is properly heated, one may never worry about the center, as that will keep warm.

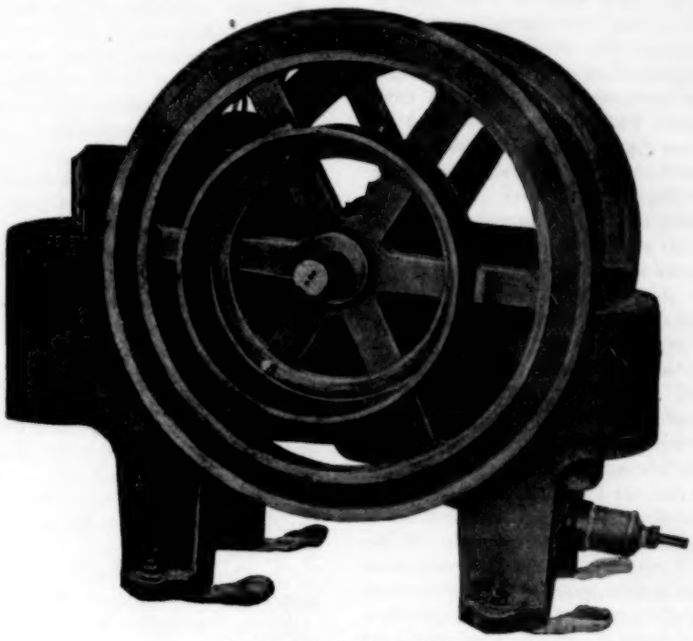
"We have found, therefore, the most satisfactory heating will result from numerous pipes discharging on the outside walls at a point about 6 feet to 8 feet above, and directed towards the floor. These pipes should be located from 25 feet to 40 feet apart, depending upon the character of the building. This arrangement causes hot air to be blown downward, whence it spreads on the floor, keeping it warm before the air has a chance to follow its natural tendency and ascend to the roof. Hot air has a very bad faculty of getting up in the trusses and if you blow the air directly at the floor and get the floor warm, at the same time keeping the outside of the building warm, your problem is practically solved. In the case of an underground duct, it is well to use short outlet pieces which will discharge the air along the walls at the floor.

"At the works of the Fore River Ship & Engine Building Co., they have an overhead pipe system with drops on the walls, which was put in according to the regular practice. Later they added 50 percent to the building and are now heating it with the same apparatus. That is, we picked out a fan heater which we considered to be the proper size for that particular building and it worked in a perfectly satisfactory manner. Later the ship company added 50 percent to the length of the building. We extended the piping and carried drops on the walls every 30 feet, blew the air on the floor with ample outlets on the ends, and in the coldest weather the heat of the building, which is 50 percent larger than we would care to guarantee with our apparatus, was perfectly satisfactory to them. Their success is entirely attributed to the excellent system of air distribution."

A ROCK AND ORE CRUSHER.

A rock and ore crusher manufactured by the Wm. R. Martin Iron Works, Lancaster, Pa., is shown in the engraving. This machine is made in several sizes and has been carefully designed to stand the excessive strains brought upon this class of crushing machinery. The body is cast in one piece, avoiding the bolted joints which are so liable to work loose and cause considerable damage by allowing the shafts and other parts to get out of line. The swing jaw and the pitman are exceptionally heavy and strong, while the jaw plates are made of a special mixture of hard iron and chilled on the wearing surfaces. Each crusher is furnished with a pair of toggle plates and the machines are equipped with heavy flywheels and the necessary driving pulley.

The Nos. 4, 6 and 8 respectively have a receiving capacity of 10x7 inches, 15x9 inches and 20x10 inches; an approximate capacity per hour of 8 to 15 tons, and weigh 7,500, 15,000 and 18,000 pounds. These crushers require 8, 12 and 15 horsepower, according to size. The capacity as here given is based upon having the jaws set about 1½ inches apart and will vary with the size to which the material is reduced. The nature of the material will of course affect the capacity of the crusher.



A ROCK AND ORE CRUSHER.

A suit for $1,000,000 has been brought by Harry Cilley, of Boston, in the United States Circuit Court against the United Shoe Machinery Co. The plaintiff says that he has been engaged in manufacturing shoe machinery and asserts that the defendant has attempted to monopolize the trade in shoe machinery and has wrongfully obtained control of the market. His business, he declares, has been destroyed and his property rendered useless.

At the annual meeting of stockholders of the Tennessee Coal, Iron & Railroad Co. held at Tracy City, Tenn., last week, H. R. Sloat, assistant treasurer of the company, was elected a director to succeed Elverton R. Chapman, of New York. The other directors whose terms expired were Don H. Bacon, William Barbour and Albert B. Boardman. They were reelected. Mr. Sloat, who will succeed Mr. Chapman, has been in the New York office of the Tennessee Co. for about ten years, and has been assistant to Mr. Beecher, secretary and treasurer, for several years.

The Jackson & Sharp plant of the American Car & Foundry Co., at Wilmington, Del., has received a contract from New Zealand for five fine passenger coaches. This plant has just completed its contract for twenty-seven coaches for the Reading Railroad.

THE SHELBY IRON CO.

The report of President T. G. Bush, of the Shelby Iron Co., Shelby, Ala., has been issued for the year ending March 31, 1903. The company has two charcoal furnaces at Shelby with an estimated annual output of 40,000 tons of car wheel iron. The statement of assets, in which the furnaces are put in at $234,000 and lands cleared, timber and ore, at $301,061, shows a total of $1,331,975. The liabilities at the same figure include $1,000,000 capital stock, $210,413 balance in profit and loss account, $66,095 surplus and $9,555 prospective furnace repairs. The pig iron output for the year was 37,222 tons. Commenting on the operations of the year President Bush says:

"Furnace No. 1 was in operation during the fiscal year with the exception of the month of March, when it was blown out for relining. The work on this furnace has been completed, with decided improvements over what it was heretofore. I think its capacity and efficiency have been improved, and I regard it in its present condition probably the best charcoal furnace in the South. Furnace No. 2 was blown out for repairs December 4, 1901. It was not blown in until the first week of May, 1902. It has been in continuous operation since that time, and is now showing a material increase in output over its previous results.

"As is well known, the iron market generally was active in the fiscal year, prices reaching a maximum beyond the expectations of any one. The prices which at one time seemed reasonable and fair, and at which we sold a large percentage of our output, later appeared comparatively low; although taking the year as a whole, we secured fairly good average prices. The market for iron for future delivery, covering the first and second half of the present calendar year, has been good, so that we have been able to sell at good prices a large percentage of our prospective output for the remainder of the year 1903. We expect from the condition of our furnaces that our output for the present fiscal year will be increased; and, therefore, we will probably have an additional quantity of iron to offer over and above the sales already made.

"During the year just closed, two dividends were paid, one 6 percent and one 10 percent, in the months of April and November, 1902. A further dividend has been declared, payable May 15, 1903.

A receiver for the Blue Mountain Iron & Steel Co., at Baltimore, whose plant is at Catoctin, Md., has been applied for by Ernest Sharp, who claims that the company owes him $240. The company, it is alleged, has closed its plant and has held no meeting of directors for about eight months.

STEEL CASTINGS AND THEIR USE.

The journal of the American Foundrymen's Association condenses from *Stahl und Eisen* a lecture by Bernard Osann before the Metallurgical Association of Upper Silesia, reviewing the condition of the steel casting industry as evidenced by the Dusseldorf Exposition.

The saving in weight and improvement of quality in material has been the keynote of the successful introduction of the steel casting. The reduction in weight from the standpoint of freighting in the export trade seems to be the most prominent feature German producers are concerned with, as their transportation facilities are far behind ours in point of magnitude and economy. Mr. Osann described how the conditions of the ship building trade required results which seemed impossible, but which were ultimately attained, these remarks reminding us of the time when the stern posts, etc., of our battle ships also went to the foundries of the country. It was simply a case of compelling the manufacturer to furnish what the industry required, and he succeeded better than he thought. Mr. Osann gives the history of the steel casting industry very briefly, the invention dating back to 1851, and being made by Jacob Mayer. The great trouble with steel castings was always in the hot and cold cracks, but the study of these phenomena finally furnished the means to overcome the difficulties. In the first place a very pure material was required, then a very quick removal of the molding sand to allow proper contraction without tearing apart the casting. Then again it is necessary to design the casting in such a way that undue straining is avoided, a point to be well thought over even for gray castings. On the whole it is better to anneal important castings on general principles, in order to overcome the tendency to crack by reason of internal strains. The temperature selected for this purpose should be between 1,300 and 1,500 degrees F., preferably an exact temperature best found in practice and constantly checked by the Le Chatelier pyrometer. Special care must be taken to avoid shrink holes. The importance of this will be seen from the fact that a locomotive frame of about 30 feet required 32 pouring gates and risers to come out sound. An interesting method of obtaining the dimensions of the sink head for a casting is given, which shows by means of the lines of continuous setting just how large an area is required in the riser to allow liquid material to flow into what would otherwise be a shrink hole in the interior of the casting. Mr. Osann advises the steel founder and the industrial engineer to get together more especially for electrical, mechanical and ship-building work. He advises that experiments be made on the permeability of steel castings (which are now being carried out in this country) and especially that the question of annealing castings be given more attention, which is also the case here now, as annealed castings are specified more and more in our work. A series of descriptions of special castings exhibited, as well as special kinds of steel for casting purposes, concludes the article.

The contract between the Alabama Steel & Wire Co. and the Tennessee Coal, Iron & Railroad Co., whereby the latter furnished the former steel billets for the manufacture of rods, expired on April 30. The rod mill department of the wire company was closed a few days ago and it is reported that it will not be operated again until the Schulers are in a position to make steel in Gadsden. This shutdown does not affect the operation of the wire and nail mills, as there is a sufficient stock of rods on hand to run for a long time.

At the annual meeting of the stockholders of the Cleveland Furnace Co., of Cleveland, on May 4, the following directors were elected for the ensuing year: Wm. A. Rogers, Archer Brown, D. B. Meacham, S. W. Croxton, Wm. G. Park. The directors elected the following officers: D. B. Meacham, president; S. W. Croxton, vice president; C. Birdsall Smith, secretary and treasurer; D. T. Croxton, general manager. The furnace is being rapidly pushed to completion, and is expected to go in blast in July.

The Hardy Shipbuilding plant, Seattle, Wash., has been sold at sheriff's sale for $15,833, the Pacific National Bank being the purchaser.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

The Grant Deuse Air Machine Co., Manhattan, N. Y., has been incorporated with a capital of $15,000. The directors are: Edward S. Thomas, Otto Greenberg, and Leo Oppenheimer, New York.

Macgowan & Finnegan Foundry & Machine Co., St. Louis, capital stock $50,000, has been incorporated to manufacture agricultural implements.

The I. B. Rowell Co., Menomonee Falls, Wis., capital $75,000, has been incorporated to do a foundry and machine business.

The Rincon Foundry Co., San Francisco, has been incorporated with a capital of $50,000. The directors are: A. F. Kindt, Emory Chance Brace, James A. Ryan, A. J. Starling, and N. Sullivan of San Francisco.

The Brooks Tire Machine Co., Wichita, Kansas, has been organized with a capital of $100,000 to manufacture a patent tire setting machine.

Burlington Foundry Co., Burlington, Kansas, has been incorporated with a capital of $5,000.

The Sheet Steel Stamping Co., Detroit, Mich., has been incorporated with a capital of $30,000. The stockholders are: Hugh D. Walker, Preston, Canada; James A. Straith, Windsor, Ont.; Oscar E. Fleming, Windsor.

An application for charter has been filed with the Secretary of State of New York by the Vehicle Equipment Co., of Waverly, Tioga County, to carry on the business of "truckmen, hackmen and mechanical and electrical engineers, manufacturers, and dealers in motive power." The company is capitalized at $3,000,000 and the directors are Martin Conboy, H. T. L. Mead, Leonard D. Baldwin, M. J. Duffy, Henry Schoenherr, C. H. Smith, E. W. Ulman, A. J. Baldwin and C. A. Green, all of New York city.

The Michigan Tin Can Co. is the name of a new concern recently incorporated under the laws of Michigan to do business in the city of Detroit. The company has a capital of $100,000 and has bought the old Michigan Can Co.'s plants which had a capacity of 30,000 cans daily. Extensive additions are to be made to the plants.

The Kewanee Boiler Co., Kewanee, Ill., has increased its capital stock from $300,000 to $400,000.

The American Foundry Co., Columbus, Ind., has been incorporated with a capital of $10,000. The directors are: Marshall T. Reeves, M. O. Reeves, Girnie L. Reeves, Daniel McNeil, Gideon C. Batton.

The Dayton Gas Engine Co., Dayton, O., has been incorporated with a capital of $100,000.

A new locomotive manufacturing concern is to be established in Toronto. The company has just received a charter from the Ontario government under the name of the British American Locomotive Works, with a capital of $1,000,000.

The Converter Furnace & Steel Co. has been incorporated at Pierre, S. D., with a capital of $1,200,000.

The Milwaukee Bridge Co., Milwaukee, Wis., has increased its capital stock from $25,000 to $125,000.

John Krauft, of Kansas City, Mo., is figuring on establishing a boiler shop, machine shop and foundry at Enid, Oklahoma.

Equipment will shortly be purchased by the Ford City Foundry & Machine Co., of Ford City, Pa. The capital is $200,000. The main building will be 500x110 feet, in addition to foundry, pattern shop and power building.

The Webster, Camp & Lane works of the Wellman-Seaver-Morgan Co., at Akron, O., will soon purchase a number of new tools to increase the capacity of their machine shop.

Fires and Accidents:—

Fire at the plant of the Day Metallic Mfg. Co., Detroit, Mich., May 5th resulted in a loss of $6,000, covered by insurance.

Fire at the new locomotive works at Longue Pointe, Canada, May 6, resulted in a loss of $5,000, the loss be-

ing building material which was to have been used in one of the new structures.

A part of the plant of the Union Foundry & Machine Co., Birmingham, Ala., was destroyed by fire last week. Loss $2,500 covered by insurance.

New Construction:—

The H. V. Hartz Co., Cleveland, manufacturer of special machinery, pressed steel tackle blocks, etc., will erect a building 100x200 feet, three stories.

The contract has been let for the new mechanical laboratory of Case School of Applied Science, Cleveland.

In addition to buildings previously mentioned, the Winton Motor Carriage Co., Cleveland, has let the contract for the erection of a machine shop, 100x240 feet, one story.

A machine shop, 27x64 feet, will be erected at the Emma furnace plant of the American Steel & Wire Co., in Cleveland.

General Manager C. H. Ackert, of the Southern Railway, has announced that it is the plan of that company to double the capacity of the machine shops at Knoxville, Tenn.

The Wheeling Corrugating Co., Wheeling, W. Va., has leased a building into which it will move and thereby largely increase its capacity. A new building, 65 x 150 feet, will also be erected.

Harry Robbins, part owner of the Bignall Foundry Co., Medina, N. Y., has purchased a site of nine acres and will soon begin the erection of a foundry plant which will give employment to about 100 men.

P. B. Canfield, of Binghamton, N. Y., and his nephew, Chas. D. Canfield, of Bath, N. Y., will establish a plant for the manufacture of gas and gasoline engines at Binghamton.

The Chattanooga Roof & Foundry Co., Chattanooga, Tenn., will build a new warehouse 50 x 100 feet.

W. K. Mitchell & Co., Philadelphia, will build a two-story pipe bending and machine shop 60 x 140 feet.

President H. G. Burt, of the Union Pacific Railroad, has ordered Chief Engineer Berry to prepare plans for improvements to the shops of the company at Cheyenne, Wy. The improvements will include a central power generating plant, an extension to the machine shop and a new roundhouse. The approximate cost of the new buildings is $500,000.

The Oshkosh Logging Tool Co., Oshkosh, Wis., will soon begin the erection of a plant consisting of the main building 157 x 64 feet and several minor structures.

Ground was broken a few days ago for doubling the size of the Lloyd Mfg. Co.'s plant, Minneapolis. The addition will be two stories, 60 x 150 feet. The Lloyd Co. has rejected a proposition to remove to Massachusetts, and will continue in Minneapolis manufacturing the Lloyd patent steel wheel and other products of the company which Mr. Lloyd has invented.

The White Spring Co., which will soon move to Detroit from Chicago, has had plans prepared for the building of a plant 50 x 130 feet, one story.

The construction work will begin shortly on the Mexican Permanent Exposition, which is to be built in Mexico City. Jose de Landro, of the Mexican capital, is president of the Exposition company.

Work has been started at Marietta, O., on the new building which will be erected by Jas. W. Nye and others to accommodate a branch shop of the Jos. Reid Gas Engine Co., of Oil City, Pa. Owing to the large demand for its engines in the western and southern oil fields the company has decided to build this branch.

The Illinois Steel Co. has broken ground for a new building in which to erect hoisting machinery for iron mines of the company, in the town of Freedom, near Baraboo, Wis.

T. H. Buckley, Worcester, Mass., is organizing a company to manufacture electric and steam passenger cars, coaches and snow plows. A site of three acres has been obtained, and plans for the plant have been drawn by Messrs. Frost, Briggs and Chamberlain.

The Christensen Engineering Co., Milwaukee, has under consideration plans for an addition, 186x248 feet.

The business of the Beach Mfg. Co., Lyons, Mich., has been growing so rapidly that the company is now erecting an addition to the foundry and arrangements are being made to purchase castings from another concern. The company manufactures a patent culvert.

The Northern Iron Works, Winnipeg, Manitoba, will this summer add an up-to-date boiler shop to its plant. The company was established about three years ago, and its business has been growing rapidly.

The Northern Wire & Cable Co. expects shortly to begin the erection of a plant at Fifteenth and Oklahoma avenues, Milwaukee, to manufacture cables and general supplies. Some of the machinery to be used has been ordered.

At a meeting of the stockholders of the Co-operative Foundry Co., Rome, Ga., a few days ago, it was decided to double the capacity at once. The company has been paying large dividends.

A large addition is being built to the machine shop of the D. Clint Prescott Co.'s works, Marinette, Wis. This will give an additional floor space of 3,600 square feet. The plant has been running night and day since the first of December.

The Eastern Steel Foundry Co. is negotiating for the purchase of land at Eddystone, Pa., for the erection of a plant.

Work has been begun on an addition to the foundry of the Straight Line Engine Co., Syracuse, N. Y. The addition will be 160 x 96 feet. A 15-ton electric crane and other machinery will be installed.

The Nova Scotia Steel & Coal Co. has, it is reported, decided to build four new blast furnaces, within the next four years. The one now in course of construction, by the Rarig Engineering Co., Sydney, C. B., with a capacity of 400 tons of pig iron per day, will be ready for bricking in two or three days. The above-named company has the contract for constructing the skip hoist on the ore pier now being erected at North Sydney.

The Independence Foundry Co., Independence, Mo., has outgrown its present quarters and begun the erection of a new and larger plant. The new buildings will be of brick, and will stand on higher ground between the present site and the Missouri Pacific main line depot. It is expected that the new plant will furnish employment for about 50 percent more men than the present one.

The Cambridge-Byesville Steel Co. is now building at Byesville, O., a 35-ton open-hearth furnace, with billet and bar mills. The plant will be modern in every respect and will be in operation by September 1st. This company owns a large tract of six-foot steam coal adjacent to plant. C. L. Bailey, of Marietta, O., is president; Lakin C. Taylor, of Cambridge, secretary; A. A. Taylor, treasurer, and John S. Black, general counsel.

The National Tube Co. is busily engaged in preparing for the building of the new tube mill at McKeesport. There are now about 500 living houses on the site of the mill, and all of these are to be torn down within 60 days. What will become of the 2,500 people who now reside in the buildings is a somewhat puzzling question. A number of smaller industries will be compelled to move to other sections of the country; among these is the McKeesport Foundry & Machine Co., which has sold ground it now occupies to the tube company and must vacate by July 1. D. P. Smith, general manager of the works, says that the company will likely be reorganized, the capital stock increased and a new and larger plant erected near McKeesport.

General Industrial Notes:—

The new plant of the Marietta Sheet Steel & Tin Plate Co., Marietta, Ohio, was placed in operation last week.

The rolling mills of the Republic Iron & Steel Co., at Springfield, Ill., resumed operation last week after a long shutdown. There are now about 300 men working, and the force will be gradually increased.

The Carruthers Foundry Co., Parkersburg, W. Va., has sold its foundry to a local company headed by N. L. Upson. The machine shop was not included in the sale, but will be moved to Marion, Ind., where it will be operated by the present owners. The new company will make numerous improvements at the foundry plant.

The report published in daily newspapers that the plant of the Monarch Stove Mfg. Co., Mansfield, O., a subsidiary company of the American Stove Co., will be dis-

mantled and moved to Lorain, O., is officially declared to have no foundation.

The stockholders of the South Baltimore Foundry Co. have approved the general plan to merge with the South Baltimore Car Works and the Ryan & McDonald Mfg. Co., the stockholders of which have already agreed to the plan. Each company has appointed a committee to jointly arrange and work out the details for the merger. The three enterprises are located at Curtis Bay, near Baltimore, and their interests are interwoven. The consolidated company is to be named the South Baltimore Steel, Car & Foundry Co. and will have a capital of $1,000,000.

The Union Machine Co., Fitchburg, Mass., will open a branch shop at Sherbrooke, Quebec, for the manufacture of screen plates, etc., used in the paper industry.

Dr. W. H. Leavitt, president of the Leavitt Mfg. Co., Tuscola, Ill., has purchased a foundry building at Champaign, Ill., and will move his business to that city.

The plant of the Alcott, Ross & Scully Co., Dunkirk, N. Y., has been purchased by the Buffalo Tool & Machine Co. Part of the machinery will be sold and part removed to Buffalo.

The Harrisburg Foundry & Machine Co., Harrisburg, Pa., is building a large engine for direct connection to a generator to be built by the general Electric Co. for shipment to Manila for Government lighting purposes.

The Baldwin Casting Co., Parkersburg, W. Va., has sold the building which it recently erected, and will not engage in business. The company has been dissolved.

The Queen City Machine Tool Co. has leased the building formerly occupied by the Cincinnati Shaper Co., at Webster and Sycamore Sts., Cincinnati, and will build shapers exclusively, 16-inch stroke and up. W. H. Roach, who was for several years identified with Cincinnati machine tool concerns, is president and general manager, and A. M. Watcher, formerly with E. A. Kinsey & Co., is secretary and treasurer.

The United States Wire Mat Co., Decatur, Ill., recently incorporated, has simply renewed its charter, which had expired.

The Allis-Chalmers Co. has secured an important contract for equipment to be installed in the Cerro de Pasco mines, Peru, which are being developed on a large scale by Americans, headed by J. B. Haggin, Mills Building, New York.

Peter Judge has purchased the machinery department of the T. L. Sykes works, Fargo, N. D., and will hereafter operate the plant.

The purchasing, auditing, lumber and mechanical departments of the general offices of the Southern Car & Foundry Co. have been moved to Anniston, Ala., from Birmingham.

The new Bowie foundry at Rome, Ga., will be put in operation the 15th of May with about 100 employes.

The plant of the Jones & Abbot foundry building, Zanesville, O., has been leased by the H. V. Dockray Brass Co., which will establish a plant for the manufacture of brass.

The West Jersey Tube Works, Bridgeton, N. J., began the operation of its rolling mill and pipe mill May 4. The rolling mill had not been in operation for a long time, as it was found more economical to buy the skelp than to run the mill as it was. Extensive improvements have been made in the plant which will contribute towards its economical operation.

The Baldwin Locomotive Works, Philadelphia, have secured a contract for ten locomotives to be shipped to Guatemala for use on the Trans-Continental Railroad, which is to be built by the Central American Improvement Co.

The business heretofore conducted by G. A. Wegner under the name of Eagle Iron Works, at Perry and Mississippi Sts., Buffalo, recently incorporated at Albany under the name of "Wegner Machine Co.," takes over all assets and liabilities of the Eagle Iron Works. G. A. Wegner and Geo. F. Mayer will continue in their respective capacities with the new firm, the former as president and treasurer, and the latter as vice president and superintendent.

The Jewel Furnace Co., Elkhart, Ind., recently incorporated, will manufacture hot air furnaces and will do sheet metal work. The company will sell to the consumer only. The officers are: President, L. R. Boyle; vice president, Benj. Diffler; secretary and treasurer, H. J. Bostwick.

The Louisville Cornice Roofing & Heating Co., Louisville, Ky., recently incorporated, succeeds H. Murray & Co. The company will do a general business in way of cornices, tin and slate roofing, steel castings and warm air furnace work. It does not intend to build, as it is already located and its equipment is complete.

The C. Mattison Machine Works, Beloit, Wis., recently incorporated, will continue the business heretofore conducted by C. Mattison and no change in the plant or equipment will be made outside of the addition of some new machinery.

The Northern Electric Mfg. Co. has recently placed in operation at its works at Madison, Wis., a 300-h. p. cross compound self-oiling engine, arranged for direct connection to two 75-k. w. Northern generators. The Ball Engine Co., Erie, Pa., is supplying the engines.

The Bureau of Supplies and Accounts of the Navy Department has issued a schedule of supplies combining the requirements of all the Eastern navy yards at the present time, in order to give bidders the opportunity of competing for deliveries at all yards, as well as at one, at the same time and under one proposal. Heretofore the general practice has been to issue a schedule for each yard separately. By combining purchases as far as practicable it is hoped to secure a broader field for competition. All proposals issued by the department contain full information, specifications and instructions to intending bidders. While they provide for a guarantee to accompany the bid to cover execution of contract in case award is made, upon furnishing satisfactory assurances, concerns are permitted to file a general guarantee covering all bids which they may submit, and thus avoid the formality of securing the execution of a separate guaranty for each proposal. Bids are opened and recorded at stated times at the Navy Department, Washington, the next opening of a general proposal for supplies being at noon, May 19. Blank schedules may be obtained on addressing the purchasing pay officers of the navy, situated in all the principal seaport cities, or the Bureau of Supplies and Accounts, Navy Department, Washington, D. C.

The Union Iron Works, of San Francisco, are installing a power transmission plant near Reward, in Inyo County, Cal., from which they will transmit power electrically over a distance of about two miles to the mill of the Reward Gold Mining Co., where induction motors will be used to drive a 20-stamp mill, an air compressor, and a rock breaker. The apparatus, which has been purchased from the Westinghouse Electric & Mfg. Co., includes a 120-k. w. three-phase alternator; a 2-h. p. exciter; a type "6" switchboard panel, including voltmeters, ammeters, rheostats, etc.; two 50-h. p., type "C" induction motors, complete with auto-starters, slide rails, etc.; a 15-h. p. induction motor; three 7½-k. w., o. d. transformers; two 1-k. w., o. d. transformers, and eight lightning arrester units. The transmission will be at 2,200 volts.

As has been anticipated, frequent banking of furnaces last year on account of coke shortage has made it necessary to reline a number of furnaces which under ordinary conditions would have been kept in blast several years longer. The Hannah furnace of the Republic Iron & Steel Co., at Youngstown, has gone out and will not resume until about July 15. No. 3 stack of the Ohio works of the Carnegie Steel Co., Youngstown, is being relined. At several other furnaces in the Valleys it is expected that it will be necessary to blow out before many weeks.

H. Bickford and Wm. Nelson announce that under the firm name of H. Bickford & Co. they have succeeded to the business formerly conducted by H. Bickford, at Lakeport, N. H., for the manufacture of boring and turning mills.

The bell said to have been cast by Paul Revere has been received at Troy, N. Y., to be re-cast. It weighs about 1,300 pounds and hung in the Congregational Church at Leominster, Mass., until a short time ago, when the building was destroyed by fire. It was so damaged by the fire that re-casting was found to be necessary.